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THE LEXICOSTATISTICAL CLASSIFICATION OF THE AUSTRONESIAN LANGUAGES.
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STATISTICAL DATA DEALING WITH BASIC VOCABULARY COMPARISONS AMONG A SIGNIFICANT GROUP OF AUSTRONESIAN LANGUAGES ARE PRESENTED. SOME OF THE LANGUAGES ARE CLASSIFIED INTO SUBGROUPS UNDER GEOGRAPHICAL DIVISIONS, AND OTHERS ARE REGARDED AS SUBGROUPS IN THEMSELVES. THE LANGUAGES COVERED IN THE STUDY STRETCH GEOGRAPHICALLY FROM MADAGASCAR TO EASTER ISLAND AND FROM TAIWAN, SOUTHEAST ASIA, AND HAWAII ON THE NORTH TO INDONESIA, NEW ZEALAND, AND POLYNESIA ON THE SOUTH. (JH)

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By

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NEW HAVEN

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BIBLIOGRAPHY AND ABBREVIATIONS

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EW - E. Wolfenden.

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GG - George W. Grace.

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GS - Gordon Svelmoe.

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HPM - Howard P. McKaughan.

ID - Isidore Dyen.

JIAEA - Journal of the Indian Archipelago and Eastern Asia. Singapore.

JPS - Journal of the Polynesian Society.

JRASMB - Journal of the Royal Asiatic Society, Malayan Branch. Singapore.

JRASSB - Journal of the Royal Asiatic Society, Straits Branch. Singapore.

LN - Len Newell.

MAC - Martha Ann Chowning.

MC - Matthew Charles.

NA - Norman Abrams.

RE - Richard Elkins.

RG - Richard Gieser.

Roth - H. Ling Roth, The natives of Sarawak and British North Borneo. London, 1896.

SE - Samuel Elbert.

SMJ - Sarawak Museum Journal. Kuching.

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SWJA - Southwestern Journal of Anthropology.

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Tijd. - Tijdschrift voor Indische Taal- Land- en Volkenkunde. Batavia.

TL - T. Lyman.

VBGKW - Verhandelingen van het Bataviaasch Genootschap van Kunsten en Wetenschappen. Batavia.

WHG - Ward H. Goodenough.

WO - William Oates.

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Agusan-Manobo (189), Talacogon, Agusan, Mindanao, Philippines. GS.

Agutaynon (183), Philippines. HPM.

Aitutaki (191), Cook Is. DM.

Alangan (186), N. E. Mindoro, Philippines. HCC.

Amboina, Kota (199), Ambon, Indonesia. Misses Greeth Lokollo and Jo Malessij per MC.

Ambonese, Ambon, Indonesia. Hoëvell. See Asilulu, Haruku, Hila, Nusalaut, Saparua.

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Asilulu-Ambonese (182), Ambon, Indonesia. Hoëvell.

Atiu (191), Cook Is. DM.

Atayal (180), Taiwan. Rev. Clare McGill.

Atok (195), Apayao, N. Luzon, Philippines. EW and WO.

Babatana (200), Choiseul I., N. W. Solomon Is. Nathan Sipuda.

Babuyan-Batak (186), Palawan, Philippines. HPM and RG.

Bakovi (187), Willaumez Pen., New Britain I. Father Alfred Hagen.

Bakun-Kankanay (184), Mountain Province, Philippines. TL and RGi.

Balbalasang-Kalinga (185), Balbalasang, Balbalan, Luzon, Philippines. RE and NA.

Baler-Dumagat (192), Luzon, Philippines. EW.

Balinese (195), Bali, Indonesia. Miss Muter Anak-Agung.

Balinese (199), Bali, Indonesia. Tarunawidogdo Kamil.

Banaue-Ifugao (177), Luzon, Philippines. HPM.

Banoni (191), S. W. Bougainville, N. W. Solomon Is. GG.

Banten (193), W. Java. Roswitha Djajadiningrat.

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Barran-Isneg (199), Apayao, N. Luzon, Philippines. EW and WO.

Batak, N. Sumatra, Indonesia: see Angkola, Karo, Simalungun, Toba.

Batak, Palawan, Philippines: see Babuyan-Batak.

Bauro (159), San Cristobal, Solomon Is. Gabelentz and Meyer.

Bayag-Isneg (199), Apayao, N. Luzon, Philippines. EW and WO.

Bayyu-Bontok (189), Luzon, Philippines. RE and NA.

Besemah (165), C. Sumatra, Indonesia. Helfrich.

Biak (187), Kotabaru, Biak I., W. Irian, Indonesia. GG.

Biga (184), Wakde I., W. Irian, Indonesia. GG.

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Dang (175), New Hanover I. GG.

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Hameha (198), New Caledonia. GG.

Hanglulu-Ifugao (173), Luzon, Philippines. HPM.

Hanunoo (198), S.E. Mindoro, Philippines. HCC.

Hapa (181), Labu, Morobe, N. New Guinea. GG.

Hapao-Ifugao (185), Luzon, Philippines. NA.

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Hawaiian (198), Hawaiian Is. SE.

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Houailou (193), New Caledonia. GG.

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Iai (= Wen Yai, 197), Uvea I., Loyalty Is. GG.

Ibanag (199), Tuao, Luzon Philippines. EW and WO.

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Inibaloy: see Bokod, Daklan, Kabayan.

Iráya (191), N. Mindoro, Philippines. HCC.

Isinay: see Aritao, Dupax, Itawi.

Isneg: see Barran, Bayag, Kabugao, Malaweg, Nabwangan.

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Kairiru (170), N. E. New Guinea. GG.

Kajupulau (193), W. Irian, Indonesia. GG.

Kalabit (164), Upper Sarawak, Borneo. Douglas.

Kalamian (182), Busuanga, Palawan, Philippines. HPM.

Kalanguya-Ifugao (171), Luzon, Philippines. HPM.

Kalinga: see Balbalasang, Lubo, Lubuagan, Mallango, Pinukpuk, Tabuk.

Kantilan-Cebuan (198), Kantilan, Surigao, Mindanao, Philippines. V. Arreza.

Kankanay: see Bakun, Buguias, Kapangan, Kibungan, Mankayan, Sagada.

Kapangan-Kankanay (192), Benguet, Luzon, Philippines. EW and TL.

Kapingamarangi (181), Micronesia. SE.

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Kiangan-Ifugao (175), Luzon, Philippines. HPM.

Kibungan-Kankanay (183), Benguet, Luzon, Philippines. TL and RG.

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Kuiwai (178), S. W. Coast of New Guinea. GG.

Kurudu (152), W. Irian. J. C. Anceaux per GG.

Kusage (200), New Georgia, C. Solomons. C.m.

Kusaie (199), Caroline Is. C.m.

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Mele-Fila (166), Efate, S. New Hebrides. S. Elbert.

Mengen (186), New Britain I. GG.

Mentok-Malay (200), Banka I., Indonesia. Abu Ubaidah Ali.

Minangkabau (200), Padang, W. Sumatra. Alidin Doeana per MC.

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Minyafuin (= Bahasa Gebi, 181), S. W. of Waigeo. [illegible]

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INTRODUCTION

Before now I have adhered to the practice of calling this family of languages Malayopolynesian.[1] Others have followed the practice of using the name Austronesian. These names have thus far been exactly synonymous. In this work the names are used to designate different collections of languages. Evidence is given below that there is probably a subgroup including eastern and western languages for which the name Malayopolynesian is appropriate. For this reason we now use Austronesian for the entire family.

The purpose of this report is to present the provisional results of a statistical comparison of the basic vocabularies of a collection of Austronesian languages. By reason of the very number of its members, the Malayopolynesian family has great importance among the language families of the world. A fair estimate would place the number of Austronesian languages at about 500. If the number of the languages in the world is set at about 4000, then about 1/8 of all the world's languages are Austronesian.

To classify so many languages is a task of no mean proportions. Not only is the number large, but, as is the case with many languages spoken by peoples who in the main do not occupy the center of the world's stage, the data needed from these languages is in a large number of cases not easily available.

The stimulus for this classification came originally from the interest of ethnologists and archaeologists working in the Pacific area. It was their hope that a notion of the implications of the distribution of the Austronesian languages for the migration of their speakers might present them with suggestions as to probable fruitful areas of investigation. As a consequence of this, the Tri-Institutional Pacific Program was formed about 1954, with finances supplied by the Carnegie Foundation. The three participating institutions are Yale University, University of Hawaii, and the Bishop Museum of Hawaii. This study was initiated under the sponsorship of this Program.

Although originally the main support of this project came from the Tri-Institutional Pacific Program, additional support at various stages has been received from the National Science Council, the Department of Health, Education and Welfare, the MIT Computing Center, and the Southeast Asia Program of Yale University. As can be seen from the section called 'The Austronesian Lists Employed' the contributors to this project have been many. Most important among them is George Grace who collected a large amount of the material in the field, mainly from Melanesia. Others--teachers, missionaries, anthropologists-- have sent in materials from Melanesia and elsewhere. Members of the Summer Institute of Linguistics contributed heavily to the lists for languages in the Philippines and Vietnam.[2]

It has become increasingly clear that the strongest hypothesis regarding the homeland of peoples speaking languages belonging to the same family is one that assigns this homeland to the area in which the genetically most diverse members of the family are to be found. It is reasonable to assume that the whole of a large number of groups of people is not likely to migrate as a collection of distinct groups. If then we find the most diverse collection of languages belonging to the same family in a particular area there is a prima facie argument that the languages grew different in that area rather than elsewhere.[3]

In order to determine different degrees of genetic diversity, there must be a measure of such diversity. If genetic diversity be regarded as the complement of genetic similarity, we can measure the similarity of languages and regard its complement as the measure of diversity.

Two languages are genetically most similar to each other if they were the ones which had most recently ceased being one language. After a single language has become more than one language, if its different forms persist, in the course of time they can be expected to grow more and more different from each other. If some measurable features were to change as the language changed, the measurement of this feature would indicate the degree of similarity between the languages in this sense.

We regard two languages A and B genetically more similar to each other than to any third language if A and B were more recently the same language than either was with any other language and conversely.

We can construct a diagnostic list of meanings which we will call a vocabulary list. If for some set of languages we collect the words for these meanings, we can proceed to compare the words in the different lists to see whether they were cognate. Cognates with the same meaning are homosemantic cognates. If the lists of two languages A and B show significantly more homosemantic cognates than either did with any third language, I infer that the two languages were probably most recently the same language.

The determination that we are dealing with cognates rather than borrowings in some cases is difficult to make. A word which is determinably a borrowing of another, is not cognate with that word. To keep the number of indeterminable borrowings small we choose meanings for which the number of borrowings will probably be small in any case. It has become clear over years of investigation that the number of borrowings in meanings that we will call basic is usually very small. The words for 'ear', 'nose', 'river', 'sand', 'die' and the like seem relatively rarely to be borrowed. The words for meanings of this kind tend to be stable in all languages and tend not to be replaced by any other words regardless of origin. By choosing basic meanings for the diagnostic list, we can keep the effect of undiscovered borrowings in the lists down.

Our confidence that borrowings play an unimportant role except locally in the determinations is also in part based on the wide distribution of the languages. They stretch from Madagascar to Easter Island and from Formosa, Cham and Hawaii on the north to Indonesia, New Zealand and Polynesia on the south. The wide distribution of the languages and the selection of meanings for which words exist in all cultures probably keep the effects of undiscovered borrowing close to negligibility, if we except languages presently or recently in contact.

For the purpose of the comparison of the Austronesian languages a list of 196 basic meanings was employed. The meanings used are those in the 200-word list constructed by Swadesh.[4] Three--snow, ice, and freeze--were excluded as unsuitable for languages which are located mainly in tropical areas. The meaning that was also excluded because the variety of classes of cognate relations was too great to be fitted into the program adopted.

For a particular language it has often turned out that not all of the items could be filled out. In our present study only lists with 150 items or more were employed.

The number of lists that were used is 371. This number is however not to be regarded as the number of Austronesian languages compared. Among the lists were included a number of non-Malayopolynesian languages of the area on the one hand and also in some instances different lists for the same language, but collected from different sources.

For each pair of languages we are interested in the percentage of homosemantic cognates shown in their lists, for this is regarded as the measure of their similarity. Since 371 lists imply 68,635 pairs of lists and since in each pair of lists there are at least one hundred pairs of entries, calculation of the percentages of cognates of each list with each other list is based on more than 7,000,000 pairs of words.

The machine program for the calculation was written by John Carroll of Harvard University.[5] The calculation of all pairs of percentages took up about 16 hours on the IBM 704, at least until recently among the very largest of the high-speed computers. The basis of the program is the decision that the cognation of a pair of homosemantic words is determinate or indeterminate: and if determinate, cognate or non-cognate. These decisions were made beforehand; the machine merely counted the decisions and made the required calculations. This superficially simple scheme can result in a large variety of classes of words in a particular meaning since, for example, a particular group of cognates can be indeterminate with some number of other groups. Furthermore if a list exhibits two entries for a meaning, these entries can be separately cognate with different cognate groups. Although for most meanings such complications remained relatively well within bounds, in the case of the meaning that they compelled the abandonment of the meaning.

As will be seen later, the hypothesis of the geographical origin of a family depends on the implications of dissimilarity. For this the greatest source of error is not borrowing, but unrecognized cognates. In this matter too I believe that the effect of errors of determination was kept small by excluding from the count all pairs of words whose cognation was reasonably doubtful. This policy made possible a conservative judgment of cognation; the rule adhered to was that near-certainty was demanded for a positive or negative determination. It is unlikely that any large number of cognate pairs would go unrecognized in any pair of lists; the probability that a cognate pair will be recognized increases with the number of cognate pairs, for recognizable correspondences are then more likely to recur. Despite this relatively rigorous policy, for few pairs of lists was the percentage of determinate (either cognate or non-cognate) pairs of words in the number of comparable pairs of words (i.e. meanings for which both lists had entries) as low as 85.0%.

[1] Cf. Dyen 1962.

[2] All of these lists were processed for the machine by my secretary of the period, Mrs. Joanne Cardona, whose devoted effort sped the work immeasurably. William Gardner, a student of Prof. Carroll's, made a sine qua non contribution by supervising the machine-processing of the lists.

[3] Cf. Dyen 1956.

[4] Cf. Swadesh.

[5] Cf. Carroll and Dyen.

THE LANGUAGE LIMIT

The percentage 70.0% has been taken to be (approximately) the lowest score between dialects of the same language. In this function this percentage is called the PROVISIONAL LANGUAGE LIMIT. If two lists score 70.0% or more with each other or with the same list, they are assigned to the same language. In fact if a chain of percentages 70.0% or higher connect a set of lists, they are all assigned to the same language.

A number of lists from the same language were computed. Those that were adequate lists (174 items or more) were treated in the same manner as different dialects. For example there are two lists of Tagalog. On the basis of their common highest percentage, their other percentages were averaged. If two adequate lists scored 70.0% or higher and were therefore regarded as dialects of the same language, they would be treated in the same way.

The figure of 70.0% is an arbitrary one, but its choice is based on a certain amount of experience. There are already indications that lists of the same language collected in different ways probably indicate the presence of other factors if they score less than 80.0%. Most pairs of lists which would at first glance be regarded as representing different dialects of the same language seem to score 70.0% or better. In general, lists with the same language name, but different local source, have common scores higher than 70.0%. Notable exceptions are found among the Ifugao lists, some of which score below 60.0% with each other. As a consequence some Ifugao lists are indicated to be from related languages instead of dialects of the same language. As experience accumulates and comparison with other tests becomes possible, the percentage used as the language limit may ultimately be modified.

A complete set of lists of dialects of the same language or a list which is not part of such a complete set is a language set of lists. The number of language sets of lists is the number of languages represented in the lists. The number of language sets of lists with more than one member (i.e. containing a number of dialects) is 31. The total number of lists involved in the language sets with more than one member is 89. Thus the number of lists which serve only a dialectal function is (89 - 31=) 58. The total number of Austronesian languages with which we are concerned is (303 - 58=) 245. This number suggests that the number of Austronesian languages, hitherto often set at about 500, is probably below this figure rather than above it.

SUBGROUPS

The percentage by which a language or group is classified together with other languages or groups is its critical percentage. A critical percentage which has been used to form a group is a basic percentage of that group.

All of the Austronesian languages are assigned to formally discrete groups. A group is a subfamily, a genus, a cluster, a hesion, or a linkage. These terms are applied according to the amount of difference between the lowest basic percentage of the group and the highest percentage of any member of the group with a non-member. This difference is called the critical difference. A group is called a subgroup if the size of critical difference is unknown or uncertain.

A subgroup is a subfamily if the critical difference is 9.5 pp. or greater. The X^2 of the observables of percentages differing by this amount on a base of 200 is significant (or very close to significance) at the 5% level; that is, there is one chance in twenty or more that a subfamily appears to be discrete by chance.

A subgroup is a genus if the critical difference is 8.0 pp. or greater and less than 9.5 pp. The X^2 of the observables of percentages differing by this amount on a base of 200 is significant (or close to significance) at the 10% level: i.e., there is one chance in between ten and twenty that a genus appears to be discrete by chance.

A subfamily or a genus is a closed group. The probability that another member will be added from among those computed is regarded to be equal to the probability that the grouping is due to chance: i.e., no greater than one in ten. The superordinate classification of subfamilies and genera is determined by the averaged percentages of the members with non-members. These averaged percentages are regarded as the percentages of the subgroup. In effect members of closed groups are treated like dialects of the same language or lists from the same language (see above).

A subgroup is:

1. A cluster, if the critical difference is 5.0 - 7.0 pp.
2. A hesion, if the critical difference is 2.5 - 4.9 pp.
3. A linkage, if the critical difference is less than 2.5 pp.

A crude estimate of the probabilities involved in a cluster or a hesion is as follows:

1. A cluster has a probability of appearing to be a discrete group by chance which varies approximately from .3 - .1 (i.e., from three chances in ten to one chance in ten of being due to chance).

2. A hesion has a probability of appearing to be a discrete group by chance which varies from .6 - .3 (i.e., from six chances in ten to three chances in ten of being due to chance).

A linkage has even a greater probability of appearing to be discrete by chance than a hesion. The justification of a linkage is mainly that it collects a group of languages which, except for the Malayopolynesian Linkage, besides being linked by percentages (nuclearly rather than segmentally) seem to congregate geographically. The Malayopolynesian Linkage is simply a linkage by percentages which appear to favor a grouping uniting the Polynesian and some Melanesian languages among others immediately with the languages of the west as against a large collection of languages which have low scores with all other Austronesian languages.

In effect then wherever the terms cluster, hesion, or linkage are used the discreteness of the membership of that group is highly uncertain. The probability that the true membership of a group is exactly as indicated is greatest if the group is a cluster and least if it is a linkage but in no case can it be said to be high. However since linkages appear to become valuable at the lower percentages it seems reasonable to believe that lower percentages are different from higher percentages and represent a crowding of groups which cannot be distinguished accurately by present procedures.

A subgroup that is a cluster, hesion or linkage is an open group; the probability that other members are to be found among those computed is relatively high. The superordinate classification of an open group is determined by the highest percentage of a member with a non-member.

THE LISTS

The total number of lists computed was 371. Of these 17 were from non-Austronesian languages and 2 were from elevated status-styles. These 19 lists have been excluded. Thus the number of Austronesian lists dealt with here is 352.

The lists which represent the various languages range in degree of completeness from 150 items to 200. The number of items is raw; it includes the number of items present for the four excluded meanings (see above). This inclusion introduces a certain amount of ambiguity, but the amount is regarded as very small. Very few lists do not include a word for 'that' whereas only the fullest lists include words for 'snow', 'ice' and/or 'freeze'.

A list is regarded as being either adequate or subadequate. An adequate list has 174 items or more and a subadequate list has less than 174 items. The number 174 was chosen as the nearest convenient number to 175. A language which is represented by an adequate list is an adequately represented language (ARL); other languages are subadequately represented languages (SRL).

Every language represented by an adequate list appears in the main classification. A language represented by a subadequate list is introduced into the main classification only if its inclusion does not otherwise affect the classification. Thus such languages are introduced only if they are members of a subfamily or a genus. In the main classification a language represented by a subadequate list is marked by an asterisk: e.g., *Tarakan (II.c.7.2). In one instance a subfamily is so marked because it includes only such languages: e.g., *Hanglulic Subfamily (II.c.11.2.5.3).

A distribution of the lists according to the raw number of items entered in each is as follows:

Adequate	
190-200	189
185-189	34
180-184	42
174-179	25
Total adequate	290
Total subadequate	62
Total	352

Subadequate	
170-173	12
165-169	16
160-164	14
155-159	11
150-154	9
Total subadequate	62

Some lists represent the same language as far as is known. Such lists are associate lists. Associate lists are of some interest in the study of list behavior. For as we observe the common percentages of associate lists, we are in a better position to estimate the implications of the common percentages of non-associate lists.

Associate lists have been treated differently according to whether they are subadequate or adequate. The percentages of subadequate associate lists have been disregarded for the purposes of classification. The percentages of three barely adequate (i.e., with 174 items) associate lists have likewise been disregarded in favor of full or nearly full associate lists. Other adequate associate lists have been treated in the same manner as dialects.

The pairs of associate lists have been divided into groups by the criteria of (1) adequacy and (2) association with an adequate list. The result is however only two sizable groups because the group consisting of subadequate associates of subadequate lists has very few members.

Our interest in associate lists is in their common percentages. These are given below in three groups. In Group 2 the number of items of the list is given and its percentage or percentages with its associates; wherever more than one percentage is given, there are two adequate associates. Elsewhere only the percentages of the associate lists are given. The three instances of barely adequate lists associated with fuller lists have been treated in Group 3.

Group 1. Subadequate associates of subadequate lists.

Gilbertese	90.2
Kayan	76.1, 73.2, 70.3
Tettum	81.8

Group 2. Subadequate associates of adequate lists.

Efate (164)	85.9
Enggano (158)	69.4
Gorontalo (172)	79.0
Mafoor (170; = Numfor)	83.5, 72.1
Pileni (165)	85.9
Sagada-Igorot (169)	70.1

Sawu (162)	68.4, 66.4
Sumba (154)	86.3, 82.2
Tikopia (158)	91.3
Trukese (162)	93.5
Waropen (151)	60.4
Yapese (167)	83.7

Group 3. Adequate associates of adequate lists.

(Those which have been disregarded in the main classification are marked with an asterisk).

Achinese	70.8
Angkola-Batak	72.9
Balinese	75.1
Baree	70.9
*Buginese (174)	85.8
Cebuan	81.5, 80.8, 79.0
Chamorro	81.8
Gunantuna (= Tinato Tuna, Blanche Bay)	84.7, 82.9
Javanese	84.7
Kapingamarangi	83.0
Macassarese	93.2
Merina	90.9
Minangkabau	80.6
Murut	73.9
Nengone	82.1
Numfor	85.3

*Nukuoro (179)	80.2
Palau	90.4
Petats	87.9
Ponapean	88.3, 86.1, 83.8
*Roviana (186)	78.4
Sasak	78.4
Sawu	65.4
*Sumba (174)	76.3
Tagalog	90.8
Tahitian	81.2
Teop	84.8
Tiruray	92.8
Toba-Batak	70.7
Tongan	84.4

The distribution of the percentages of Groups 2 and 3 are as follows:

	Group	
	2	3
Above 95.0	0	0
90.0 - 94.9	2	5
85.0 - 89.9	3	5
80.0 - 84.4	3	12
75.0 - 79.9	1	5
70.0 - 74.4	2	5
65.0 - 69.9	3	1
60.0 - 64.9	1	0

It seems reasonable to suppose that in Group 3 the percentages above 85.0 reflect fewest linguistic factors. It seems less likely that the percentages below 85.0 reflect only mechanical differences. It is more likely that dialectal differences coupled perhaps with errors of cognation have combined to produce the low percentage. Further study of associate lists is desirable.

Lists which are ignored in further calculations are all of those in Group 2 (12) and those with an asterisk in Group 3 (4). Lists which are considered from here on number (352 - 16 =) 336.

Lists in Groups 1 and 3, although taken into consideration, are not independent of their associated list. Lists are unassociated if they are not associate lists. A complete set of associate lists or a single unassociated list is an independent set of lists. There are three sets of subadequate associates of subadequate lists of which one contains three members. There are furthermore 30 sets of adequate associates, 4 of which are ignored (see above), and 3 of which include three members. There are thus (3 + 26 =) 29 independent sets in Groups 1 and 3. The total number of lists in these sets (except for ignored sets) is (7 + 55 =) 62. The total number of independent Austronesian sets is thus (336 - [62 - 29 =] 33 =) 303.

THE MAIN CLASSIFICATION

a. Plan of the Classification

The main conclusions regarding the classifications are presented in two sections constituting the main classification. The main classification is an outline that can be regarded as a family tree which proceeds from all the observed languages downward toward the trunk (= Proto-Austronesian). Section Two is a continuation of Section One in the presentation. The delimitation of Section One has the purpose of interrupting the total presentation in order to permit (1) achieving a presentation of all the languages and dialects represented by lists and (2) segregating the relatively well-established parts of the classification from the more tentative.

In Section One the geographical distribution of the Malayopolynesian languages has been divided into four areas. These areas are:

1. West: Indonesia, Sarawak, Southeast Asia Mainland, Madagasar.
2. Northwest: Taiwan, Philippines, North Borneo, and Brunei.
3. North and East: Micronesian and Polynesia.
4. Central: East New Guinea and Melanesia.

Each of the Austronesian languages is listed in its appropriate geographical division. Those which can be classified into a subgroup limited to that area are so treated and the remainder are regarded as subgroups in themselves.

As each language is introduced in its subgroup and area it receives a designation. The first element in this designation is its area, marked by the appropriate roman numeral. The second element is a minuscule which designates the highest areally limited subgroup to which it belongs. The last number after the minuscule is assigned arbitrarily to the language within its subgroup of lowest order. Any numerals between the minuscule and the last numeral designate (from left to right, by arbitrarily assigned numerals) the successively lower subgroups to which the language belongs. For example Malay receives the designation I.a.1.1.1.1.1 which indicates that it is in the first highest subgroup (a) of the first area (I) and is the first language of its immediate subgroup which is the first member of its subgroup and so on. A subgroup similarly receives a designation. The designation of a subgroup of highest order ends with a minuscule: e.g., I.a for West Indonesian Cluster.

All languages which are not subgrouped in an areally limited subgroup receive the minuscule u. Thus Malagasy is designated I.u.1; it is the first language listed among the ungrouped languages of the first area.

The result is that the designation of a language or subgroup serves as a backward reference to its introduction in Section One and also serves to place it within its area.

Those sets of lists which are regarded as being from dialects of the same language are detailed at the end of each division of Section One under the minuscule v.

Since within any division of Section One all of the languages have the same roman numeral, the roman numeral is omitted in Section One. In Section Two however it is always given.

The divisions of Section Two are given the majuscules A, B ..... G as their designation. These are all open subgroups whose order of introduction is partly arbitrary. However these groups are not in general coordinate. Actually:

1. A (Northwest Hesion) is a subclass of B (Hesperonesian Linkage).

2. B (Hesperonesian Linkage), C (Heonesian Linkage), and D (Moluccan Linkage) are subclasses of E (Malayopolynesian Linkage).

3. E (Malayopolynesian Linkage) and F (Willaumez Linkage) are subclasses of G (Austronesian Linkage).

The immediate superordinate relation of a highest subgroup (including those with the minuscule u) in either section is indicated at their first introduction by a bracket containing an arrow followed by the name of the superordinate classification: e.g., a. West Indonesian cluster [—>Hesperonesian Linkage, B.1: 23.9] means that the West Indonesian Cluster is superordinately classified as the first language in the Hesperonesian Linkage, designated as B (and therefore in Section Two).

After the main classification, which deals chiefly with the adequate lists, a separate treatment follows in which the remaining subadequate lists are treated. This section like the treatment of dialects is regarded as lying outside of the main classification. The division by area is followed and the minuscule s is adopted for the subadequate languages treated there.

b. Plan of Citation

The plan of citation in the main classification is designed so that all the percentages by which the languages and groups have been classified are presented. All critical percentages and consequently all basic percentages are presented. Each critical percentage is shared by two languages or groups and therefore appears twice, once with each language or group as the focus.

The focus language or subgroup is followed by the percentage and the latter is then followed by a bracket containing the immediately related language or group: thus, Malay 68.8 [Minangkabau].

Since the superordinate classification of an open group is dependent on the highest percentage of a member with a non-member, it is useful to cite the particular member whose percentage is used. This is done by first citing the name of the group followed by a colon and then the name of the member: thus, 'Sundic Hesion: Gayo 30.8 [Batak Subfamily]' means 'Gayo of the Sundic Hesion has the highest percentage of a member with a non-member and the non-member is the Batak Subfamily.'

There can be intervening open group classifications each of which is dealt with in the same way: thus, 'West Polynesian Cluster: Ellicean Hesion: Ellice 56.0' means that '56.0% is the highest percentage of a member of the West Polynesian Cluster with a non-member and it is held by Ellice of the Ellicean Hesion.'

If the necessity arises of citing two languages or groups in sequence as coordinates the first is followed by a comma and then the second: thus '20.1 [Central Formosan Hesion: Paiwan, Bunun]' means '20.1% is held with Paiwan and Bunun both of the Central Formosan Hesion'; and '23.9 [Celebes Hesion: Bugic Subfamily], [Malagasy]' means '23.9% is held with the Bugic Subfamily of the Celebes Hesion and with Malagasy.'

Sometimes the practice of citing each percentage twice leads to a congregation of percentages under the same language or group. Besides the percentage by which the language itself is superordinately classified there may also be cited the percentages which have been used in classifying other languages. [Such congregations of percentages are to be noted since they tend to indicate that a particular language or group is consistently scoring higher than the languages or groups with which it has been associated.] A semicolon follows the prior of two percentage citations: e.g.

If the first part of successive citations is the same, that part is omitted in the second citation: thus 'Malayopolynesian Linkage: Heonesian

Linkage: Fiji 19.6 [Paama]; Mota 19.4 [Male]' means 'Fiji of the Heonesian Linkage of the Malayopolynesian Linkage has 19.6% with Paama and Mota (of the Heonesian Linkage of the Malayopolynesian Linkage) has 19.4% with Male.' In the same way 'Malayopolynesian Linkage: Heonesian Linkage: Kerebuto 17.2 [New Georgian Subfamily]; 16.1 [Mono]' means 'Kerebuto of the Heonesian Linkage of the Malayopolynesian has 17.2% with the New Georgian Subfamily and 16.1% with Mono.' .

On occasion it has been found useful to include subadequate lists in the main classification. This has been done whenever the percentages appeared to leave no doubt as to the classification. When a language is represented by a subadequate list, its name is preceded by an asterisk (*).

It has appeared advisable in the main classification to ignore the percentages of certain languages other than their critical percentage. Such languages have been found to regularly score noticeably higher or lower than (the two or more) other members of their subgroup and it seemed best to omit them from further calculations. Languages represented by such lists are marked with a double asterisk (**).

c. Section One

I. West: Indonesia, Southeast Asia Mainland, and Madagascar.

a. a. West Indonesian Cluster[→Hesperonesian Linkage, B.1: 23.9].

a.1. 1. Sundic Hesion: Gayo (a.1.4) 30.8 [Batak Subfamily (a.2)]; Malayic Hesion (a.1.1.1): Malayan Subfamily (a.1.1.1.1) 29.2 [Cru (a.3)].

a.1.1. 1. Javo-Sumatra Hesion: Malayic Hesion (a.1.1.1): Malayan Subfamily (a.1.1.1.1) 34.1 [Sasak (a.1.2)]; Madurese 33.8 [Balinese (a.1.3)]; Malayan Subfamily 33.7 [Gayo (a.1.4)]; 33.4 [Dayak Subfamily (a.1.5)].

a.1.1.1. 1. Malayic Hesion: Madurese (a.1.1.1.2) 36.7 [Javanese (a.1.1.3)].

a.1.1.1.1. 1. Malayan Subfamily 45.8 [Madurese (a.1.1.1.2)]; 43.7 [Achinese (a.1.1.1.3)]; 39.9 [Lampungic Subfamily (a.1.1.1.4)].

a.1.1.1.1.1. 1. Malay 68.8 [Minangkabau (a.1.1.1.1.2)]; 66.0 [Kerintji (a.1.1.1.1.3)].

I.

a.1.1.1.1.2.	2. Minangkabau 68.8 [Malay (a.1.1.1.1.1)].
a.1.1.1.1.3.	3. Kerintji 66.0 [Malay (a.1.1.1.1.1)].
a.1.1.1.2.	2. Madurese 45.8 [Malayan Subfamily (a.1.1.1.1)].
a.1.1.1.3.	3. Achinese 43.7 [Malayan Subfamily (a.1.1.1.1)].
a.1.1.1.4.	4. Lampungic Subfamily 39.9 [Malayan Subfamily (a.1.1.1.1)].
a.1.1.1.4.1.	1. Lampung 56.2 [*Kroë (a.1.1.1.4.2)].
a.1.1.1.4.2.	2. *Kroë 56.2 [Lampung (a.1.1.1.4.1)].
a.1.1.2.	2. Sundanese 38.0 [Javanese (a.1.1.3)].
a.1.1.3.	3. Javanese 38.0 [Sundanese (a.1.1.2)]; 36.7 Malayic Hesion (a.1.1.1): Madurese (a.1.1.1.2)].
a.1.2.	2. Sasak 34.1 [Javo-Sumatran Hesion (a.1.1): Malayic Hesion (a.1.1.1): Malayan Subfamily (a.1.1.1.1)].
a.1.3.	3. Balinese 33.8 [Javo-Sumatran Hesion (a.1.1): Malayic Hesion (a.1.1.1): Madurese (a.1.1.1.2)].
a.1.4.	4. Gayo 33.7 [Javo-Sumatran Hesion (a.1.1)]; Malayic Hesion (a.1.1.1): Malayan Subfamily (a.1.1.1.1)].

I.

a.1.5. 5. Dayak Subfamily 33.4 [Javo-Sumatran Hesion (a.1.1): Malayic Hesion (a.1.1.1): Malayan Subfamily (a.1.1.1.1)].

a.1.5.1. 1. Sampitic Cluster: Katingan (a.1.5.1.2) 59.9 [Ngadju (a.1.5.2)].

a.1.5.1.1. 1. Sampit 66.8 [Katingan (a.1.5.1.2)].

a.1.5.1.2. 2. Katingan 66.8 [Sampit (a.1.5.1.1)].

a.1.5.2. 2. Ngadju 59.9 [Kantingan (a.1.5.1.2)].

a.2. 2. Batak Subfamily 30.8 [Sundic Hesion (a.1): Gayo (a.1.4)].

a.2.1. 1. Toba-Angkola 57.7 [Simalungun (a.2.2)].

a.2.2. 2. Simalungun 57.7 [Toba-Angkola (a.2.1)]; 56.9 [Karo (a.2.3)].

a.2.3. 3. Karo 56.9 [Simalungun (a.2.2)].

a.3. 3. Cru 29.2 [Malayic Hesion (a.1.1.1): Malayan Subfamily (a.1.1.1.1)].

b. b. Celebes Hesion [⟶ Hesperonesian Linkage, B.3: 23.9].

I.

b.1. 1. Bareic Subfamily 26.5 [Bugic Subfamily (b.2)].

b.1.1. 1. Baree 46.4 [*Linduan (b.1.2)].

b.1.2. 2. *Linduan 46.4 [Baree (b.1.1)].

b.2. 2. Bugic Subfamily 26.5 [Bareic Subfamily (b.1): Baree (b.1.1)].

b.2.1. 1. Macassarese 42.5 [Buginese (b.2.2)].

b.2.2. 2. Buginese 42.5 [Macassarese (b.2.1)].

c. c. Gorontalic Subfamily [→Northwest Hesion A.3: 27.2].

c.1. 1. Gorontalo 59.9 [Suwawa (c.2)].

c.2. 2. Suwawa 59.9 [Gorontalo (c.1)].

d. d. Ambic Subfamily [→Moluccan Linkage, D.6: 23.8].

d.1. 1. Ambonese 49.0 [Paulohi (d.2)].

d.2. 2. Paulohi 49.0 [Ambonese (d.1)].

e. e. Bigic Cluster [→Austronesian Linkage, G.18: 15.8].

e.1. 1. Bulic Cluster: Minyafuin (e.1.2) 23.4 [Biga (e.3)].

e.1.1. 1. Buli 28.7 [Minyafuin (e.1.2)].

e.1.2. 2. Minyafuin 28.7 [Buli (e.1.1)].

e.2. 2. As 23.1 [Biga (e.3)].

I.

e.3. 3. Biga 23.4 [Bulic Cluster (e.1): Minyafuin (e.1.2)].

f. f. Bombarai Hesion [→Austronesian Linkage, G.23: 14.5].

f.1. 1. Sobeic Subfamily 19.0 [Tarpic Subfamily (f.2)].

f.1.1. 1. Sobei 38.2 [Moar (f.1.2)].

f.1.2. 2. Moar 38.2 [Sobei (f.1.1)].

f.2. 2. Tarpic Subfamily 19.0 [Sobeic Subfamily (f.1)].

f.2.1. 1. Tarpia 35.1 [Bonggo (f.2.2)].

f.2.2. 2. Bonggo 35.1 [Tarpia (f.2.1)].

g. g. Geelvink Hesion [→Austronesian Linkage, G.21: 14.6].

g.1. 1. Biakic Subfamily 17.2 [Wandamic Subfamily (g.2): Japen (g.2.2)].

g.1.1. 1. **Biak 57.3 [Numfor (g.1.2)].

g.1.2. 2. Numfor 57.3 [**Biak (g.1.1)].

g.2. 2. Wandamic Subfamily 17.2 [Biakic Subfamily (g.1)].

g.2.1. 1. *Wandamen 40.8 [Japen (g.2.2)].

g.2.2. 2. Japen 40.8 [*Wandamen (g.2.1)].

h. h. Hollandia Subfamily [→Austronesian Linkage, G.37: 10.7].

I.

h.1. 1. Tobatic Subfamily 25.9 [Ormu (h.2)].

h.1.1. 1. Tobati 36.9 [Kajupulau (h.1.2)].

h.1.2. 2. Kajupulau 36.9 [Tobati (h.1.1)].

h.2. 2. Ormu 25.9 [Tobatic Subfamily (h.1)].

u. u. Ungrouped.

u.1. 1. Malagasy [→Hesperonesian Linkage, B.4: 23.9].

u.2. 2. Enggano [→Austronesian Linkage, G.35: 11.1].

u.3. 3. Sentah [→Hesperonesian Linkage, B.2: 26.1].

u.4. 4. Tontemboan [→Malayopolynesian Linkage, E.3: 21.5].

u.5. 5. Buru [→Moluccan Linkage, D.4: 23.8].

u.6. 6. Sumba [→Moluccan Linkage, D.5: 21.4].

u.7. 7. Sikka [→Moluccan Linkage, D.1: 25.8].

u.8. 8. Sawu [→Moluccan Linkage, D.3: 20.3].

u.9. 9. Leti [→Moluccan Linkage, D.2: 21.1].

u.10. 10. Kei [→Moluccan Linkage, D.8: 20.9].

u.11. 11. Sekar [→Moluccan Linkage, D.7: 21.1].

I.

u.12. 12. Kuiwai [→ Moluccan Linkage, D.9: 20.6].

u.13. 13. Fakfak [→ Austronesian Linkage, G.5: 19.1].

u.14. 14. Kasira [→ Austronesian Linkage, G.8: 18.9].

u.15. 15. Waropen [→ Austronesian Linkage, G.28: 13.6].

v. v. Dialects represented in the lists.

v.1. 1. The Malay language (I.a.1.1.1.1.1) has the following dialects represented among the lists: Malay, *Besemah and *Serawaj (Central Sumatra), Mentok (Bangka), and Amboina (Ambon). Besemah scores 99.3% with Serawaj, Malay scores 87.7% with Serawaj, 87.1% with Besemah, 82.0% with Mentok, and 80.9% with Amboina.

Although the Malay list scored 72.5% with one Minangkabau list, the averaged percentage of all the Malay dialects with Minangkabau lists is only 68.8%. The Minangkabau relation with Malay thus appears to be close to the language limit.

v.2. 2. The Lampung language (I.a.1.1.1.4.1) has as dialects Lampung and Komering; the latter have 89.1% as their common percentage.

v.3. 3. The Sundanese language (I.a.1.1.2) has as dialects Sundanese and Banten; their common percentage is 79.3%.

v.4. 4. The Javanese language (I.a.1.1.3) has dialects Javanese (two lists), _West Javanese_, and _Tjirebon_. Javanese scores 81.5% with West Javanese and 76.8% with Tjirebon.

v.5. 5. Toba-Angkola (Batak, I.a.2.1) probably has as dialects Toba and Angkola. Interestingly enough one Toba list scored slightly higher with one of the two Angkola lists than with the other Toba list.

v.6. 6. The *Linduan language (I.b.1.2) has dialects *Lindu and *Kulawi which have 86.9% as their common percentage.

v.7. 7. The Suwawan language (I.c.2) has as dialects _Suwawa_ and *_Bunda_; the common percentage of the latter is 73.3%.

v.8. 8. The Ambonese language (I.3.1) has the following dialects: _Nusalaut_, _Saparua_, _Haruku_, _Hila_, _Asilulu_. Nusalaut and Saparua are closest with 90.0% as their common percentage. Their averaged percentage with Haruku is 71.6% and the other dialects form a chain thus: Haruku-Hila 71.2%; Hila-Asilulu 75.2%.

v.9. 9. The Malagasy language (I.u.1) has as dialects Merina (two lists) and Antaisaka, the percentages between the latter and the other two lists being 75.6% and 70.2%.

II. Northwest: Formosa, the Philippine Islands, North Borneo and Brunei.

a. a. Atayalic Subfamily [—>Austronesian Linkage, G.30: 11.8].

a.1. 1. Atayal 35.2 [Seedik (a.2)].

a.2. 2. Seedik 35.2 [Atayal (a.1)].

b. b. Central Formosan Hesion [—>MP Linkage, E.6: 20.1].

b.1. 1. Ami 24.5 [Paiwan (b.2)]; 23.0 [Bunun (b.3)].

b.2. 2. Paiwan 24.5 [Ami (b.1)].

b.3. 3. Bunun 24.5 [Thao (b.4)]; 23.0 [Ami (b.1)].

b.4. 4. Thao 24.5 [Nunun (b.3)].

c. c. Philippine Hesion [—>Northwest Hesion, A.1: 27.5].

c.1. 1. Sulic Hesion: Bukidnic Subfamily (c.1.5) 36.2 [Maranao (c.2)]; Mesophilippine Hesion (c.1.1): Subanun (c.1.1.6) 35.3 [Yakan (c.4)]; Cotabato-Manobo (c.1.7) 33.0 [Tiruray (c.6); 31.2 [Bilic Subfamily (c.9)].

c.1.1. 1. Mesophilippine Hesion: Tagalic Hesion (c.1.1.1): Bisayan Cluster (c.1.1.1.1): Cebuan (c.1.1.1.1.1) 42.8 [Dibabaic Subfamily (c.1.2)]; Cagayanon (c.1.1.1.2)

II.

40.8 [Kalamian (c.1.3); 40.6 [Palawanic Subfamily (c.1.4)]; Bisayan Cluster (c.1.1.1.1): Cuyunon (c.1.1.1.1.4) 39.2 [Pampangan (c.1.6)].

c.1.1.1. 1. Tagalic Hesion: Bisayan Cluster (c.1.1.1.1): Cuyunon (c.1.1.1.1.4) 50.9 [Bikol (c.1.1.2)]; Butuanon (c.1.1.1.1.2) 50.0 [Mansakic Cluster (c.1.1.3): Mansaka (c.1.1.3.1)]; Cuyunon (c.1.1.1.1.4) 48.5 [Hanumoic Subfamily (c.1.1.4); Tagalog (c.1.1.1.4) 46.5 [Irayic Cluster (c.1.1.5): Iraya (c.1.1.5.1)]; Bisayan Cluster (c.1.1.1.1): Cuyunon (c.1.1.1.1.4) 45.3 [Subanun (c.1.1.6)].

c.1.1.1.1. 1. Bisayan Cluster: Cuyunon (c.1.1.1.1.4) 55.1 [Cagayanon (c.1.1.1.2)]; Cebuan (c.1.1.1.1.1) 54.1 [Mamanua (c.1.1.1.3)]; Cuyunon (c.1.1.1.1.4) 53.8 [Tagalog (c.1.1.1.4)].

c.1.1.1.1.1. 1. Cebuan 67.5 [Butuanon (c.1.1.1.1.2)]: 65.5 [Ilonggo (c.1.1.1.1.3)].

c.1.1.1.1.2.	2. Butuanon 67.5 [Cebuan (c.1.1.1.1.1)].
c.1.1.1.1.3.	3. Ilonggo 65.5 [Cebuan (c.1.1.1.1.1)]; 62.3 [Cuyunon (c.1.1.1.1.4)].
c.1.1.1.1.4.	4. Cuyunon 62.3 [Ilonggo (c.1.1.1.1.3)].
c.1.1.1.2.	2. Cagayanon 55.1 [Bisayan Cluster (c.1.1.1.1): Cuyunon (c.1.1.1.1.4)].
c.1.1.1.3.	3. Manmanua 54.1 [Bisayan Cluster (c.1.1.1.1): Cebuan (c.1.1.1.1.1)].
c.1.1.1.4.	4. Tagalog 53.8 [Bisayan Cluster (c.1.1.1.1): Cuyunon (c.1.1.1.1.4)].
c.1.1.2.	2. Bikol 50.9 [Tagalic Hesion (c.1.1.1): Bisayan Cluster (c.1.1.1.1): Cuyunon (c.1.1.1.1.4)].
c.1.1.3.	3. Mansakic Cluster: Mansaka (c.1.1.3.1) 50.5 [Tagalic Hesion (c.1.1.1): Bisayan Cluster (c.1.1.1.1): Butuanon (c.1.1.1.1.2)].
c.1.1.3.1.	1. Mansaka 57.8 [Tagakaolo (c.1.1.3.2)].
c.1.1.3.2.	2. Tagakaolo 57.8 [Mansaka (c.1.1.3.1)].

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c.1.1.4 4. Hanunoic Subfamily 48.5 [Tagalic Hesion (c.1.1.1): Bisayan Cluster (c.1.1.1.1): Cuyunon (c.1.1.1.1.4)].

c.1.1.4.1. 1. Hanunoo 59.6 [*Buhid (c.1.1.4.2)].

c.1.1.4.2. 2. *Buhid 59.6 [Hanunoo (c.1.1.4.1)].

c.1.1.5. 5. Irayic Cluster: Iraya 46.5 [Tagalic Hesion (c.1.1.1) Tagalog (c.1.1.1.4)].

c.1.1.5.1. 1. Iraya 52.5 [Alangan (c.1.1.5.2)].

c.1.1.5.2. 2. Alangan 52.5 [Iraya (c.1.1.5.1)]; 49.7 [*Nauhan (c.1.1.5.3)].

c.1.1.5.3. 3. *Nauhan 49.7 [Alangan (c.1.1.5.2)].

c.1.1.6. 6. Subanun 45.3 [Tagalic Hesion (c.1.1.1): Bisayan Cluster (c.1.1.1.1): Cuyunon (c.1.1.1.1.4)].

c.1.2. 2. Dibabaic Subfamily 42.8 [Mesophilippine Hesion (c.1.1): Tagalic Hesion (c.1.1.1): Bisayan Cluster (c.1.1.1.1): Cebuan (c.1.1.1.1.1)]; 39.7 Bukidnic Subfamily (c.1.5)].

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c.1.2.1. 1. Dibabaon 61.2 [Agusan-Manobo (c.1.2.2)].

c.1.2.2. 2. Agusan-Manobo 61.2 [Dibabaon (c.1.2.1)].

c.1.3. 3. Kalamian 40.8 [Mesophilippine Hesion (c.1.1): Tagalic Hesion (c.1.1.1): Cagayanon (c.1.1.1.2)].

c.1.4. 4. Palawanic Subfamily 40.6 [Mesophilippine Hesion (c.1.1): Tagalic Hesion (c.1.1.1): Cagayanon (c.1.1.1.2)].

c.1.4.1. 1. Palawano 57.6 [Tagbanua (c.1.4.3)].

c.1.4.2. 2. Babuyan 60.2 [Tagbanua (c.1.4.3)].

c.1.4.3. 3. Tagbanua 60.2 [Babuyan (c.1.4.2)]; 57.6 [Palawano (c.1.4.1)].

c.1.5. 5. Bukidnic Subfamily 39.7 [Dibabaic Subfamily (c.1.2)]; 38.7 [Cotabato-Manobo (c.1.7)].

c.1.5.1. 1. Bukidnon 53.5 [Central Manobo (c.1.5.2)].

c.1.5.2. 2. Central Manobo 53.5 [Bukidnon (c.1.5.1)].

c.1.6. 6. Pampangan 39.2 [Mesophilippine Hesion (c.1.1): Tagalic Hesion (c.1.1.1): Bisayan Cluster (c.1.1.1.1): Cuyunon (c.1.1.1.1.4)].

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c.1.7. 7. Cotabato-Manobo 38.7 [Bukidnic Subfamily (c.1.5)].

c.2. 2. Maranao 36.2 [Sulic Hesion (c.1): Bukidnic Subfamily (c.1.5)].

c.3. 3. Casiguran 35.4 [Sulic Hesion (c.1): Mesophilippine Hesion (c.1.1): Tagalic Hesion (c.1.1.1): Bisayan Cluster (c.1.1.1.1): Ilonggo (c.1.1.1.1.3)].

c.4. 4. **Yakan 35.3 [Sulic Hesion (c.1): Mesophilippine Hesion (c.1.1): Subanun (c.1.1.6)].

c.5. 5. Baler 34.5 [Casiguran (c.3)].

c.6. 6. Tiruray 33.0 [Sulic Hesion (c.1): Cotabato-Manobo (c.1.7)].

c.7. 7. Murutic Subfamily 31.8 [Dusun (c.8).

c.7.1. 1. Murut 44.8 [*Tarakan (c.7.2)].

c.7.2. 2. *Tarakan 44.8 [Murut (c.7.1)]; 43.3 [*Bolongan (c.7.3)].

c.7.3. 3. *Bolongan 43.3 [*Tarakan (c.7.2)].

c.8. 8. Dusun 31.8 [Murutic Subfamily (c.7)]; 31.4 [Sulic Hesion (c.1): Palawanic Subfamily (c.1.4)].

c.9. 9. Bilic Subfamily 31.2 [Sulic Hesion (c.1): Cotabato-Manobo (c.1.7)].

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c.9.1. 1. Bilaan 49.3 [Tagabili (c.9.2)].

c.9.2. 2. Tagabili 49.3 [Bilaan (c.9.1)].

c.10. 10. Ivatan 31.4 [Cordilleran Hesion (c.11): North Cordilleran Cluster (c.11.2): Ilocano (c.11.2.2)]; 30.4 [Sulic Hesion (c.1): Palawanic Subfamily (c.1.4)].

c.11. 11. Cordilleran Hesion: North Cordilleran Cluster (c.11.2): Ilocano (c.11.2.2) 31.4 [Ivatan (c.10)].

c.11.1. 1. Inibaloy 34.5 [North Cordilleran Cluster (c.11.2): Ilocano (c.11.2.2)].

c.11.2. 2. North Cordilleran Cluster: Ilocano (c.11.2.2) 34.5 [Inibaloy (c.11.1)].

c.11.2.1. 1. Banagic Cluster: Isneg Hesion (c.11.2.1.1): Itawic Cluster (c.11.2.1.1.1) 45.6 [Ilocano (c.11.2.2)]; 40.9 [Piggattan (c.11.2.7)].

c.11.2.1.1. 1. Isneg Hesion: Itawic Cluster (c.11.2.1.1.1): Itawi (c.11.2.1.1.1.1) 54.6 [Ibanag

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	(c.11.2.1.2)]; 52.1 [Gaddang Subfamily (c.11.2.1.3)].
c.11.2.1.1.1.	1. Itawic Cluster: Malaweg (c.11.2.1.1.1.2) 58.6 [Barran (c.11.2.1.1.2)].
c.11.2.1.1.1.1.	1. Itawi 64.2 [Malaweg (c.11.2.1.1.1.2)]; 52.1 [Gaddang Subfamily (c.11.2.1.3)].
c.11.2.1.1.1.2.	2. Malaweg 64.2 [Itawi (c.11.2.1.1.1.1)].
c.11.2.1.1.2.	2. Barran 58.8 [Bayag (c.11.2.1.1.3)]; Itawic Cluster (c.11.2.1.1.1): 58.6 [Malaweg (c.11.2.1.1.1.2)].
c.11.2.1.1.3.	3. Bayag 58.8 [Barran (c.11.2.1.1.2)].
c.11.2.1.2.	2. Ibanag 54.6 [Isneg Hesion (c.11.2.1.1): Itawic Cluster (c.11.2.1.1.1): Itawi (c.11.2.1.1.1.1); 51.8 Atok (c.11.2.1.4)].
c.11.2.1.3.	3. Gaddang Subfamily 52.1 [Isneg Hesion (c.11.2.1.1): Itawic Cluster (c.11.2.1.1.1) Itawi

(c.11.2.1.1.1.1)]; 51.6 Yogad (c.11.2.1.5).

c.11.2.1.3.1. 1. Christian Gaddang 66.6 [Pagan Gaddang (c.11.2.1.3.2)].

c.11.2.1.3.2. 2. Pagan Gaddang 66.6 [Christian Gaddang (c.11.2.1.3.1)].

c.11.2.1.4. 4. Atok 51.8 [Ibanag (c.11.2.1.2)].

c.11.2.1.5. 5. Yogad 51.6 [Gaddang Subfamily (c.11.2.1.3)].

c.11.2.2. 2. Ilocano 45.9 [Kalinga Subfamily (c.11.2.3.)]; 45.6 [Banagic Cluster (c.11.2.1): Isneg Hesion (c.11.2.1.1): Itawic Cluster (c.11.2.1.1.1)].

c.11.2.3. 3. Kalinga Subfamily 45.9 [Ilocano (c.11.2.2)]; 43.7 [Igorot Subfamily (c.11.2.4)]; 42.2 [Ifugao Subfamily (c.11.2.5)].

c.11.2.3.1. 1. Balbalasang 61.1 [Pinukpuk (c.11.2.3.2)].

c.11.2.3.2. 2. Pinukpuk 61.1 [Balbalasang (c.11.2.3.1)].

c.11.2.4. 4. Igorot Subfamily 43.7 [Kalinga Subfamily (c.11.2.3)].

c.11.2.4.1. 1. Kankanay 53.1 [Sagada (c.11.2.4.2)].

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c.11.2.4.2.	2. Sagada 54.0 [Bontok (c.11.2.4.3)]; 53.1 [Kankanay (c.11.2.4.1)].
c.11.2.4.3.	3. Bontok 54.0 [Sagada (c.11.2.4.2)]; 54.0 [Bayyu (c.11.2.4.4)].
c.11.2.4.4.	4. Bayyu 54.0 [Bontok (c.11.2.4.3)].
c.11.2.5.	5. Ifugao Subfamily 42.2 [Kalinga Subfamily (c.11.2.3)]; 41.6 [Isinay (c.11.2.6)].
c.11.2.5.1.	1. Kiangan 57.4 [Mayaoyao (c.11.2.5.2)]; 53.9 [*Hanglulic Subfamily (c.11.2.5.3)].
c.11.2.5.2.	2. Mayaoyao 57.4 [Kiangan (c.11.2.5.1)].
c.11.2.5.3.	3. *Hanglulic Subfamily 53.9 [Kiangan (c.11.2.5.1)].
c.11.2.5.3.1.	1. *Hanglulu 68.5 [*Kalanguya (c.11.2.5.3.2)].
c.11.2.5.3.2.	2. *Kalanguya 68.5 [*Hanglulu (c.11.2.5.3.1)].
c.11.2.6.	6. Isinay 41.6 [Ifugao Subfamily (c.11.2.5)].
c.11.2.7.	7. Piggattan 40.9 [Banagic Cluster (c.11.2.3.): Isneg Hesion (c.11.2.1.1): Itawic Cluster (c.11.2.1.1.1)].

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II.

u. u. Ungrouped.

u.1. 1. Ilongot [→Northwest Hesion, A.2: 27.5].

v. v. Dialects represented in the lists.

v.1. 1. The Cebuan language (II.c.1.1.1.1.1) has as dialects *Cebu* (three lists), *Surigaonon*, and *Kantilan*. Kantilan scores 78.2% with a Cebu list and 75.9% with Surigaonon. One Cebu list scored 70.9% with Butuanon (II.c.4.1.1.2) and a different Cebu list scored 70.6% with Ilonggo (II.c.4.1.1.3). The averaged percentages of Cebu lists are 67.5% with Butuanon and 65.5% with Ilonggo. Thus there is some reason to believe that Butuanon and Ilonggo are each close to the language limit with Cebu, but not so with each other.

v.2. 2. The Cuyunon language (II.c.1.1.1.1.4) has as dialects *Cuyunon* and *Ratagnon*; the common score of the latter is 71.3%.

v.3. 3. The Kalamian language (II.c.1.3) has as dialects *Kalamian* and *Agutaynon*; the common score of the latter is 71.3%.

v.4. 4. The Tagabili language (II.c.9.2) has as dialects *Sinolon* and *Kiamba* with 77.4% as their common percentage.

v.5. 5. The Ivatan language (II.c.10) has as dialects *Ivatan* and *Itbayat* with 77.4% as their common percentage.

v.6. 6. The Inibaloy language (II.c.11.1) has as dialects Daklan, Kabayan, and Bokod. Daklan scores 77.3% with Kabayan and 73.4% with Bokod.

v.7. 7. The Barran language (II.c.11.2.1.1.2) has as dialects Barran and Nabwangan with 77.8% as their common percentage.

v.8. 8. The Bayag language (II.c.11.2.1.1.3) has as dialects Bayag and Kabugao with 71.3% as their common percentage.

v.9. 9. The Balbalasang language (II.c.11.2.3.1) has as dialects Balbalasang, Lubo and Mallango, and Lubuagan. The common percentage of Lubo and Mallango is 85.8%. Their averaged percentage with the Balbalasang dialect is 71.8% and with Lubuagan is 68.4%. It may be that Lubuagan should be regarded as a different language since it scores less than 70.0%. However its percentage is so close to the score of Balbalasang that it has been given a dialect status. In any case the differentiation within the Balbalasan language is close to the percentage language limit.

v.10. 10. The Pinukpuk language (II.c.11.2.3.2) has as dialects Pinukpuk and Tabuk. The common percentage of the latter is 77.7% Their highest averaged percentage with a Balbalasang dialect is 63.0%. In terms of the 70.0% percentage language limit Pinukpuk appears to be distinct from Balbalasang.

v.11. 11. The Kankanay language (II.c.11.2.4.1) has as dialects Buguias, Mankayan, Kapangan, Bakun, and Kibungan. These dialects are connected by the following chain of percentages: Buguias-Mankayan 76.6%; Buguias-Kapangan 70.6%; Buguias-Kibungan 68.8%; Kibungan-Bakun 72.0%. The 68.8% of Buguias with Kibungan has been treated here as indistinguishable from their percentages of Kibungan with Bakun on the one hand and of Buguias with Kapangan on the other. It may however be that the percentage language limit should be taken more seriously. In any case it appears that the differentiation of the Kankanay language is close to the language limit.

v.12. 12. The Kiangan language (II.c.11.2.5.1) has as dialects Kiangan, Banaue, Hungduan, and Hapao. The common score of the last two is 92.1% and their averaged score with Kiangan is 71.9%, whereas Kiangan's score with Banaue is 79.0%.

v.13. 13. The Isinay language (II.c.11.2.6) has as dialects Aritao and Dupax. Their common score is 81.1%.

III. North and East: Micronesia and Polynesia.

a. a. Carolinian Subfamily [⟶Austronesian Linkage, G.4: 19.4].

a.1. 1. Ponapean 36.1 [Trukic (a.2)]; 32.5 [Marshallese (a.3)]; 25.7 [**Kusaiean (a.4)].

a.2. 2. Trukic 36.1 [Ponapean (a.1)].

a.2.1. 1. Trukese 52.9 [Wolean (a.2.2)].

a.2.2. 2. Wolean 52.9 [Trukese (a.2.1)].

a.3. 3. Marshallese 32.5 [Ponapean (a.1)].

a.4. 4. **Kusaiean 25.7 [Ponapean (a.1)].

b. b. Polynesian Subfamily [⟶Heonesian Linkage, C.3: 27.7].

b.1. 1. West Polynesian Cluster: Ellicean Hesion (b.1.2): Ellice (b.1.2.1) 56.0 [Kapingamarangi (b.4)]; 55.7 [East Polynesian Hesion (b.2): Easter (b.2.3)].

b.1.1. 1. Tongic Hesion: Tongan (b.1.1.1) 64.1 [Ellice (b.1.2.1)].

b.1.1.1. 1. Tongan 67.4 [Niue (b.1.1.2)].

b.1.1.2. 2. Niue 67.4 [Tongan (b.1.1.1)].

b.1.2. 2. Ellicean Hesion: Ellice (b.1.2.1) 64.1 [Tongan (b.1.1.1); Tikopia (b.1.2.2) 63.0 [Rennell (b.1.3)];

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62.8 [Samoan (b.1.4)]; 61.3 [Pileni (b.1.5)].

b.1.2.1. 1. Ellice 67.0 [Tikopia (b.1.2.2)].

b.1.2.2. 2. Tikopia 67.0 [Ellice (b.1.2.1)].

b.1.3. 3. Rennell 63.0 [Ellicean Hesion (b.1.2): Tikopia (b.1.2.2)].

b.1.4. 4. Samoan 62.8 [Ellicean Hesion (b.1.2): Tikopia (b.1.2.2)].

b.1.5. 5. Pileni 61.3 [Ellicean Hesion (b.1.2): Tikopia (b.1.2.2)].

b.2. 2. East Polynesian Hesion: Easter (b.2.3) 55.7 [West Polynesian Cluster (b.1): Ellicean Hesion (b.1.2): Ellice (b.1.2.1)]; 53.7 [Maori (b.3.2)].

b.2.1. 1. Rarotongan 60.2 [Hawaii (b.2.2)]; 53.7 [**Tahitian (b.2.5)].

b.2.2. 2. Hawaii 60.2 [Rarotongan (b.2.1)]; 59.3 [Easter (b.2.3)].

b.2.3. 3. Easter 59.4 [Marquesas (b.2.4)]; 59.3 [Hawaii (b.2.2)].

b.2.4. 4. Marquesas 59.4 [Easter (b.2.3)].

b.2.5. 5. **Tahitian 53.7 [Rarotongan (b.2.1)].

b.3. 3. Maori 53.7 [East Polynesian Hesion (b.2): Easter (b.2.3)].

b.4. 4. Kapingamarangi 56.0 [West Polynesian Cluster (b.1): Ellicean Hesion (b.1.2): Ellice (b.1.2.1)]; 54.5 [Nukuoro (b.5)].

b.5. 5. Nukuoro 54.5 [Kapingamarangi (b.4)].

u. u. Ungrouped.

u.1. 1. Palau [→ Malayopolynesian Linkage, E.4: 21.1].

u.2. 2. Chamorro [→ Malayopolynesian Linkage, E.5: 20.4].

u.3. 3. Rotuman [→ Heonesian Linkage, C.4: 25.3].

u.4. 4. Fiji [→ Heonesian Linkage, C.2: 26.5].

u.5. 5. Yapese [→ Austronesian Linkage, G.16: 16.1].

u.6. 6. Nauru [→ Austronesian Linkage, G.17: 16.1].

v. v. Dialects represented in the lists.

v.1. 1. The Ponapean language (III.a.1) has as dialects _Ponape_ (three lists), _Ngatik_, _Mokil_, and _Pingelap_. Ngatik scores 80.9% with one of the three Ponape lists. Pingelap scores 72.0% with one Ponape list and averages 69.6% with all three.

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Mokil scores 75.0% with Pingelap and averages 62.3% with Ponape. Thus the link of Mokil to Ponape depends on Pingelap. It is possible that the language connection has been broken between Mokil-Pingelap on one side and Ponape-Ngatik on the other. In any case the relation appears to be close to the language limit.

v.2. 2. The Wolean language (III.a.2.2) has as dialects Pulawat, Satawal, and Woleai by virtue of the following percentages: Pulawat-Satawal 8.33% and Satawal-Woleai 79.7%.

v.3. 3. The Tongan language (III.b.1.1.1) has as dialects Tonga (two lists) and Uvea. One Tonga list scores 85.4% with Uvea whereas the common score of the Tonga lists is 84.4%. Uvea scores 70.8% with Niue (III.b.1.1.2), but the averaged score of the Tongan dialects is 67.4%. The relation of Tongan and Niue is close to the language limit.

v.4. 4. The Rarotongan language (III.b.2.1) has as dialects Mitiaro, Mauke, Atiu, Mangaia, Rarotonga, Aitutaki, and Penrhyn. Mitiaro, Mauke and Atiu are practically the same dialect; they score as follows: Mitiaro-Mauke 97.8%, Mauke-Atiu 94.5%. This dialect is closely related with the others except Penrhyn as follows: Atiu-Mangaia 88.6%; Mangaia-Rarotonga 87.3%; Mauke-Aitutaki 86.4%. The averaged percentage of all with Penrhyn is 70.1% (cl. Penrhyn's highest percentage with

III.

any 71.1%). Thus there are two main dialects within the Rarotongan language: Rarotonga, with its sub-dialects as above, and Penrhyn. The differentiation of Rarotongan appears to be close to the language limit.

IV. Central: Melanesia and Eastern New Guinea.

a.	a. Tip Cluster [—>Austronesian Linkage, G.12: 17.2].
a.1.	1. Wedauic Subfamily 22.9 [Dobic Subfamily (a.2)].
a.1.1.	1. Wedauan 42.6 [(a.1.2)].
a.1.2.	2. Keheraran 42.6 [(a.1.1)].
a.2.	2 Dobic Subfamily 22.9 [Wedauic Subfamily (a.1)].
a.2.1.	1. Dobu 50.0 [(a.2.2)].
a.2.2.	2. Molima 50.0 [(a.2.1)].
b.	b. Uvolic Cluster [—>Austronesian Linkage, G.22: 14.6].
b.1.	1. Uvol 19.8 [Mamusic Genus (b.2)].
b.2.	2. Mamusic Genus 19.8 [Uvol (b.1)].
b.2.1.	1. *Mamusi 28.3 [Mengen (b.2.2)].
b.2.2.	2. Mengen 28.3 [*Mamusi (b.2.1)].
c.	c. Buka Subfamily [—>Austronesian Linkage, G.26: 13.5].
c.1.	1. Northwest Buka Subfamily 24.5 [Saposa (c.3)].
c.1.1.	1. Petatsic Subfamily 51.6 [Halian Subfamily (c.1.2)].
c.1.1.1.	1. Petats 68.8 [Sumoun (c.1.1.2)].

c.1.1.2. 2. Sumoun 68.8 [Petats (c.1.1.1)].

c.1.2. 2. Halian Subfamily 51.6 [Petatsic Subfamily (c.1.1)].

c.1.2.1. 1. Hanahan 69.1 [Lontes (c.1.2.2)].

c.1.2.2. 2. Lontes 69.1 [Hanahan (c.1.2.1)].

c.2. 2. Teopic Subfamily 23.2 [Saposa (c.3)].

c.2.1. 1. Teop 69.6 [Raosiara (c.2.2)].

c.2.2. 2. Raosiara 69.6 [Teop (c.2.1)].

c.3. 3. Saposa 24.5 [Northwest Buka Subfamily (c.1)]; 23.2 [Teopic Subfamily (c.2)].

d. d. Choiseul Subfamily [—>Austronesian Linkage, G.25: 13.8].

d.1. 1. Ririan Subfamily 29.8 [Varisian Subfamily (d.2)].

d.1.1. 1. Sengan 56.0 [Ririo (d.1.2)].

d.1.2. 2. Ririo 56.0 [Sengan (d.1.1)].

d.2. 2. Varisian Subfamily 29.8 [Ririan Subfamily (d.1)].

d.2.1. 1. Varisi 55.0 [Vagua (d.2.2)].

d.2.2. 2. Vagua 55.0 [Varisi (d.2.1)].

e. e. New Georgian Subfamily [—>Austronesian Linkage, G.13: 17.2].

IV.

e.1. 1. Rovianic Subfamily 40.0 [Marovan (e.2)].

e.1.1. 1. Roviana 52.9 [Kusagean (e.1.2)].

e.1.2. 2. Kusagean 52.9 [Roviana (e.1.1)].

e.2. 2. Marovan 40.0 [Rovianic Subfamily (e.1)]; 33.5 [Lunggic Subfamily (e.3)].

e.3. 3. Lunggic Subfamily 33.5 [Marovan (e.2)].

e.3.1. 1. Lunggan 45.5 [Duke (e.3.2)].

e.3.2. 2. Duke 45.5 [Lunggan (e.3.1)].

f. f. Lauic Subfamily [—> Heonesian Linkage, C.5: 24.5].

f.1. 1. *Lau 52.8 [Toqabaita (f.2)].

f.2. 2. Toqabaita 52.8 [*Lau (f.1)].

g. g. Lific Cluster [—> Austronesian Linkage, G.29: 13.4].

g.1. 1. Dehu 19.1 [Iai (g.3)]; 18.0 [Nengone (g.2)].

g.2. 2. Nengone 18.0 [Dehu (g.1)].

g.3. 3. Iai 19.1 [Dehu (g.1)].

h. h. North New Caledonian Cluster [—> Austronesian Linkage, G.33: 11.3].

IV.

h.1. 1. Camuhic Subfamily 19.4 [Paici (h.3)]; 18.8 [Thuangic Subfamily (h.2)].

h.1.1. 1. Haekic Subfamily 33.5 [Camuhi (h.1.2)].

h.1.1.1. 1. Haeke 51.5 [Pwamei (h.1.1.2)].

h.1.1.2. 2. Pwamei 51.5 [Haeke (h.1.1.1)].

h.1.2. 2. Camuhi 33.5 [Haekic Subfamily (h.1.1)].

h.2. 2. Thuangic Subfamily 18.8 [Camuhic Subfamily (h.1)].

h.2.1. 1. Thuanga 39.2 [Fwagumwak (h.2.2)].

h.2.2. 2. Fwagumwak 39.2 [Thuanga (h.2.1)].

h.3. 3. Paici 19.4 [Camuhic Subfamily (h.1)].

i. i. South New Caledonian Genus [—>Austronesian Linkage, G.34: 11.3].

i.1. 1. Wailic Cluster: Houailou (i.1.1) 23.8 [Hameha (i.2)]; Karagure (i.1.2) 20.2 [Numeic Subfamily (i.3)].

i.1.1. 1. Houailou 26.0 [Karagure (i.1.2)].

i.1.2. 2. Karagure 26.0 [Houailou (i.1.1)].

i.2. 2. Hameha 23.8 [Wailic Cluster (i.1); Houailou (i.1.1)].

IV.

i.3. 3. Numeic Subfamily 20.2 [Wailic Cluster (i.1): Houailou (i.1.1)].

i.3.1. 1. Nadubea 41.8 [*Kwenyi (i.3.2)].

i.3.2. 2. *Kwenyi 41.8 [Nadubea (i.3.1)].

u. u. Ungrouped.

(New Guinea and Louisiade)

u.1. 1. Nubami [—>Austronesian Linkage, G.20: 15.2].

u.2. 2. Hapa [—>Austronesian Linkage, G.36: 10.8].

u.3. 3. Acira [—>Austronesian Linkage, G.40: 7.3].

u.4. 4. Ubir [—>Austronesian Linkage, G.24: 14.4].

u.5. 5. Motu [—>Heonesian Linkage, C.7: 22.1].

u.6. 6. Panayati [—>Heonesian Linkage, G.19: 15.2].

(St. Matthias, New Hanover, New Ireland, New Britain)

u.7. 7. Mussau [—>Austronesian Linkage, G.6: 19.1].

u.8. 8. Dang [—>Austronesian Linkage, G.10: 17.4].

u.9. 9. Nalik [—>Austronesian Linkage, G.9: 18.4].

IV.

u.10. 10. Tomoip [⟶Austronesian Linkage, G.31: 11.5].

u.11. 11. Nakanai [⟶Willaumez Linkage, F.1: 21.3].

u.12. 12. Bakovi [⟶ Willaumez Linkage, F.2: 21.3].

u.13. 13. Gunantuna [⟶Austronesian Linkage, G.14: 16.4].

u.14. 14. Pililo [⟶Austronesian Linkage, G.38: 10.6].

(Solomons)

u.15. 15. Banoni [⟶ Austronesian Linkage, G.27: 13.6].

u.16. 16. Zabana [⟶Austronesian Linkage, G.39: 9.6].

u.17. 17. Mono [⟶Austronesian Linkage, G.15: 16.1].

u.18. 18. Kerebuto [⟶Heonesian Linkage, C.4: 26.5].

(New Hebrides)

u.19. 19. Mota [⟶ Heonesian Linkage, C.6: 24.5].

u.20. 20. Male [⟶Austronesian Linkage, G.3: 19.4].

u.21. 21. Paama [⟶Austronesian Linkage, G.2: 19.6].

u.22. 22. Efate [⟶Heonesian Linkage, C.1: 28.9].

u.23. 23. Tanna [⟶Austronesian Linkage, G.32: 11.2].

u.24. 24. Aneityum [⟶Austronesian Linkage, G.11: 17.2].

v. v. Dialects represented in the lists.

v.1. 1. The Petats language (IV.c.1.1.1) is represented by two lists. One of these scores 72.0% with Sumoun (IV.c.1.1.2), but the averaged score of both is 68.6%. Sumoun is either a dialect of Petats or a different language. In either case the differentiation is close to the percentage language limit.

v.2. 2. The Teop language (IV.c.2.1) is represented by two lists. Raosiara (IV.c.2.2) scores 72.2% with one Teop list, but averages 69.6% with both. Thus Raosiara may be only a highly divergent dialect of the Teop language (thus obviating the necessity of constructing the Teopic Subfamily [IV.c.2]). In any case the differentiation here is close to the percentage language limit.

v.3. 3. The Sengan language (IV.d.1.1) has as dialects Senga, Babatana, and Kuboro by virtue of the following percentages: Senga-Babatana 78.8% and Senga-Kuboro 73.5%.

v.4. 4. The Kusagean language (IV.e.1.2) has as dialects Kusage and Hoava whose common percentage is 84.6%.

v.5. 5. The Marovan language (IV.e.2) has as dialects Marovo, Bareke and Vangunu by virtue of the following common percentages: Marovo-Bareke 71.1% and Vangunu-Bareke 74.6%.

IV.

v.6. 6. The Lunggan language (IV.e.3.1) has as dialects Lungga, Kubokota, and Madegugusu by virtue of the following common percentages: Lungga-Kubokota 79.9% and Lungga-Madegugusu 72.6%.

v.7. 7. The Kerebuto language (IV.u.18) has Baranago as a dialect by virtue of their common percentage 73.2%.

2. Section Two

A. A. Northwest Hesion [—>Hesperonesian Linkage, B.5: 23.0].

A.1. 1. Philippine Hesion (II.c): Tagalog (II.c.1.1.1.4) 27.5 [Ilongot (A.2; II.u.1)]; Cebuan (II.c.1.1.1.1.1) 27.2 [Gorontalic Subfamily (A.3; I.c)].

A.2. 2. Ilongot (II.u.1) 27.5 [Philippine Hesion (A.2; II.c): Tagalog (II.c.1.1.1.4)].

A.3. 3. Gorontalic Subfamily (I.c) 27.2 [Philippine Hesion (A.1; II.c): Cebuan (II.c.1.1.1.1.1)].

B. B. Hesperonesian Linkage [—>Malayopolynesian Linkage, E.1: 21.9].

B.1. 1. West Indonesian Hesion (I.a): Dayak Subfamily (I.a.1.5) 26.1 [Sentah (B.2; I.u.3)]; 23.9 [Celebes Hesion (I.b): Bugic Subfamily (I.b.2)], Malagasy (I.u.1)].

B.2. 2. Sentah (I.u.3) 26.1 [West Indonesian Cluster (B.2; I.a): Dayak Subfamily (I.a.1.5)].

B.3. 3. Celebes Hesion (I.b): Bugic Subfamily (I.b.2) 23.9 [West Indonesian Hesion (B.1; I.a): Dayak Subfamily (I.a.1.5)];

Bareic Subfamily (I.b.1) 23.0 [Northwest Hesion (A): Philippine Hesion (II.c): Ivatan (II.c.9)].

B.4. 4. Malagasy (I.u.1) 23.9 [West Indonesian Hesion (B.1; I.a): Dayak Subfamily (I.a.1.5)].

B.5. 5. Northwest Hesion (A): Philippine Hesion (A.1; II.c): Ivatan (II.c.10) 23.0 [Celebes Hesion (B.3; I.b): Bareic Subfamily (I.b.1)].

C. C. Heonesian Linkage [→Malayopolynesian Linkage, E.2: 21.9].

C.1. 1. Efate (IV.u.22) 28.9 [Fiji (C.2; III.u.4)]; 27.6 [Polynesian Subfamily (C.3; III.b)].

C.2. 2. Fiji (III.u.4) 28.9 [Efate (C.1; IV.u.22)]; 26.5 [Kerebuto (C.5; IV.u.18)]; 24.5 [Mota (C.7; IV.u.19)].

C.3. 3. Polynesian Subfamily 27.7 [Rotuman (C.4; III.u.3)]; 27.6 [Efate (C.1; IV.u.22)].

C.4. 4. Rotuman (III.u.3) 27.7 [Polynesian Subfamily (C.3; III.b)].

C.5. 5. Kerebuto (IV.u.18) 26.5 [Fiji (C.2; III.u.4)]; 24.5 [Lauic Subfamily (C.6; IV.f)]; 22.1 [Motu (C.8; IV.u.5)].

C.6. 6. Lauic Subfamily (IV.f) 24.5 [Kerebuto (C.5; IV.u.18)].

C.7. 7. Mota (IV.u.19) 24.5 [Fiji (C.2; III.u.4)].

C.8. 8. Motu (IV.u.5) 22.1 [Kerebuto (C.5; IV.u.18)].

D. D. Moluccan Linkage [→ Malayopolynesian Linkage, E.7: 20.0].

D.1. 1. Sikka (I.u.7) 25.8 [Leti D.2; I.u.9)]; 24.4 [Hawu (D.3; I.u.8)]; 23.2 [Sumba (D.5; I.u.6)].

D.2. 2. Leti (I.u.9) 25.8 [Sikka (D.1; I.u.7)]; 21.1 [Sekar (D.7; I.u.11)]; 20.9 [Kei (D.8; I.u.10)]; 20.6 [Kuiwai (D.9; I.u.12)].

D.3. 3. Hawu (I.u.8) 24.4 [Sikka (D.1; I.u.7)].

D.4. 4. Buru (I.u.5) 23.8 [Ambic Subfamily (D.6; I.d)].

D.5. 5. Sumba (I.u.6) 23.2 [Sikka (D.1; I.u.7)]; 21.4 [Ambic Subfamily (D.6; I.d)].

D.6. 6. Ambic Subfamily (I.d) 23.8 [Buru (D.4; I.u.5)]; 21.4 [Sumba (D.5; I.u.7)].

D.7. 7. Sekar (I.u.11) 21.1 [Leti (D.2; I.u.9)].

D.8. 8. Kei (I.u.10) 20.9 [Leti (D.2; I.u.9)].

D.9. 9. Kuiwai (I.u.12) 20.6 [Leti (D.2; I.u.9)].

E. E. Malayopolynesian Linkage [→ Austronesian Linkage, G.1: 19.6].

E.1. 1. Hesperonesian Linkage (B): Celebes Hesion (B.3; I.b): Bareic Subfamily (I.b.1) 21.9 [Heonesian Linkage (E.2; C): Fiji (C.2; III.u.4)]; West Indonesian Hesion (B.1; I.a): Batak Subfamily (I.a.2) 21.6 [Tontemboan (E.3; I.u.4)]; Celebes Hesion (B.3; I.b): Bareic Subfamily (I.b.1) 21.1 [Palau (E.4; III.u.1)]; 20.4 [Chamorro (E.5; III.u.2)]; 20.1 [Central Formosan Hesion (E.6; II.b): Paiwan (II.b.2), Bunun (II.b.3)]; West Indonesian Hesion (B.1; I.a): Batak Subfamily (I.a.2) 20.0 [Moluccan Linkage (E.7; D): Sumba (D.5; I.u.6)].

E.2. 2. Heonesian Linkage (C): Fiji (C.2; III.u.4) 21.9 [Hesperonesian Linkage (E.1; B): Celebes Hesion (B.3; I.b): Bareic Subfamily (I.b.1)].

E.3. 3. Tontemboan (I.u.4) 21.6 [Hesperonesian Linkage (E.1; B): West Indonesian Hesion (B.1; I.a): Batak Subfamily (I.a.2)].

E.4. 4. Palau (III.u.1) 21.1 [Hesperonesian Linkage (E.1; B): Celebes Hesion (B.3; I.b): Bareic Subfamily (I.b.1)].

E.5. 5. Chamorro (III.u.2) 20.4 [Hesperonesian Linkage (E.1; B): Celebes Hesion (B.3; I.b): Bareic Subfamily (I.b.1)].

E.6. 6. Central Formosan Hesion (II.b): Paiwan (II.b.2) 20.1 [Hesperonesian Linkage (E.1; B); Celebes Hesion (B.3; I.b): Bareic Subfamily (I.b.1)].

E.7. 7. Moluccan Linkage (D): Sumba (D.5; I.u.6) 20.0 [Hesperonesian Linkage (E.1; B): West Indonesian Hesion (B.1; I.a): Batak Subfamily (I.a.2)].

F. F. Willaumez Linkage [⟶Austronesian Linkage, G.7: 19.0].

F.1. 1. Nakanai (IV.u.11) 21.3 [Bakovi (F.2; IV.u.12)].

F.2. 2. Bakovi (IV.u.12) 21.3 [Nakanai (F.1; IV.u.11)].

G. G. Austronesian Linkage.

G.1. 1. Malayopolynesian Linkage (E): Heonesian Linkage (E.2; C): Fiji (C.2; III.u.4) 19.6 [Paama (G.2; IV.u.21)];

Mota (C.7; IV.u.19) 19.4 [Male (G.3; IV.u.20)]; Polynesian Subfamily (C.3; III.b) 19.4 [Carolinian Subfamily (G.4; III.a)]; Moluccan Linkage (E.7; D): Kuiwai (D.9; I.u.12) 19.1 [Fakfak (G.5; I.u.13)]; Heonesian Linkage (E.2; C): Mota (C.7; IV.u.19) 19.1 [Mussau (G.6; IV.u.7)]; Kerebuto (C.5; IV.u.18) 19.0 [Willaumez Linkage (G.7; F): Nakanai (F.1; IV.u.11)]; Moluccan Linkage (E.7; D): Kuiwai (D.9; I.u.12) 18.9 [Kasira (G.8; I.u.14)]; Heonesian Linkage (E.2; C): Fiji (C.2; III.u.4) 18.4 [Nalik (G.9; IV.u.9)]; Palau (E.4; III.u.1) 17.4 [Dang (G.10; IV.u.8)]; Heonesian Linkage (E.2; C): Fiji (C.2; III.u.4) 17.2 [Aneityum (G.11; IV.u.24)]; Motu (C.8; IV.u.5) 17.2 [Tip Cluster (G.12; IV.a): Dobic Subfamily (IV.a.2)]; Kerebuto (C.5; IV.u.18) 17.2 [New Georgian Subfamily (G.13; IV.3)]; 16.1 [Mono (G.15; IV.u.17)]; 16.1 [Yapese (G.16; III.u.5)]; Hesperonesian Linkage (E.1; B): Northwest Hesion (B.5; A): Philippine Hesion (A.1; II.c): Ivatan (II.c.10) 15.8 [Bigic Cluster (G.18; I.e): Bulic

Cluster (I.e.1)]; Heonesian Linkage (E.2; C): Mota (C.7; IV.u.19) 15.2 [Nubami (G.20; IV.u.1)]; Moluccan Linkage (E.7; D): Kuiwai (D.9; I.u.12) 14.6 [Geelvink Hesion (G.21; I.g): Biakic Subfamily (I.g.1)]; Heonesian Linkage (E.2; C): Kerebuto (C.5; IV.u.18) 14.6 [Uvolic Cluster (G.22; IV.b): Mamusic Genus (IV.b.2)]; Moluccan Linkage (E.2; D): Kuiwai (D.9; I.u.12) 14.5 [Bombarai Hesion (G.23; I.f): Tarpic Subfamily (I.f.2)]; Heonesian Linkage (E.2; C): Kerebuto (C.5; IV.u.18) 13.5 [Buka Subfamily (G.26; IV.c)]; Polynesian Subfamily (C.3; III.b) 13.4 [Lific Cluster (G.29; IV.g)]; Central Formosan Hesion (E.6; II.b): Paiwan (II.b.2) 11.8 [Atayalic Subfamily (II.a)]; Heonesian Linkage (E.2; C): Rotuman (C.4; III.u.3) 11.5 [Tomoip (G.31; IV.u.10)]; Fiji (C.2; III.u.4) 11.2 [Tanna (G.32; IV.u.22)]; Kerebuto (C.5; IV.u.18) 11.3 [North New Caledonian Cluster (G.33; IV.h): Thuangic

Subfamily (IV.h.2)]; Fiji (C.2; IV.u.4), Hesperonesian Linkage (E.1; B): Northwest Hesion (B.5; A): Philippine Hesion (A.1; II.c): Murutic Subfamily (II.c.7) 11.1 [Enggano (G.35; I.u.2)]; Heonesian Linkage (E.2; C): Polynesian Subfamily (C.3; III.b) 10.7 [Hollandia Subfamily (G.37; I.h)]; 10.6 [Pililo (G.38; IV.u.14)].

G.2. 2. Paama (IV.u.21) 19.6 [Malayopolynesian Linkage (G.1; E): Heonesian Linkage (E.2; C): Fiji (C.2; III.u.4)].

G.3. 3. Male (IV.u.20) 19.4 [Malayopolynesian Linkage (G.1; E): Heonesian Linkage (E.2; C): Mota (C.7; IV.u.19)].

G.4. 4. Carolinian Subfamily (III.a) 19.4 [Malayopolynesian Linkage (G.1; E): Heonesian Linkage (E.2; C): Polynesian Subfamily (C.3; III.b)]; 16.1 [**Nauru (G.17; III.u.6)].

G.5. 5. Fakfak (I.u.13) 19.1 [Malayopolynesian Linkage (G.1; E): Moluccan Linkage (E.7; D); Kuiwai (D.9; I.u.12)].

G.6. 6. Mussau (IV.u.7) 19.1 [Malayopolynesian Linkage (G.1; E): Heonesian Linkage (E.2; C): Mota (C.7; IV.u.19)].

G.7. 7. Willaumez Linkage (F): Nakanai (F.1; IV.u.11) 19.0 [Malayopolynesian Linkage (G.1; E): Heonesian Linkage (E.2; C): Kerebuto (C.5; IV.u.18)]; Bakovi (F.2; IV.u.12) 16.4 [Gunantuna (G.14; IV.u.13)].

G.8. 8. Kasira (I.u.14) 18.9 [Malayopolynesian Linkage (G.1; E): Moluccan Linkage (E.7; D): Kuiwai (D.9; I.u.12)].

G.9. 9. Nalik (IV.u.9) 18.4 [Malayopolynesian Linkage (G.1; E): Heonesian Linkage (E.2; C): Fiji (C.2; III.u.4)].

G.10. 10. Dang (IV.u.8) 17.4 [Malayopolynesian Linkage (G.1; E): Palau (E.4; III.u.1)].

G.11. 11. Aneityum (IV.u.24) 17.2 [Malayopolynesian Linkage (G.1; E): Heonesian Linkage (E.2; C): Fiji (C.2; III.u.4)].

G.12. 12. Tip Cluster (IV.a): Dobic Subfamily (IV.a.2) 17.2 [Malayopolynesian Linkage (G.1; E); Heonesian Linkage (E.2; C): Motu (C.8; IV.u.7)]; 15.2 [Panayati (G.19; IV.u.6]; 14.4 [Ubir (G.24; IV.u.4].

G.13. 13. New Georgian Subfamily (IV.e) 17.2 [Malayopolynesian Linkage (G.1; E): Heonesian Linkage (E.2; C): Kerebuto (C.5; IV.u.18)]; 13.8 [Choiseul Subfamily (G.25; IV.d)]; 9.6 [Zabana (G.39; IV.u.16)].

G.14. 14. Gunantuna (IV.u.13) 16.4 [Willaumez Linkage (G.7; F): Bakovi (F.2; IV.u.12)].

G.15. 15. Mono (IV.u.17) 16.1 [Malayopolynesian Linkage (G.1; E): Heonesian Linkage (E.2; C): Kerebuto (C.5; IV.u.18)].

G.16. 16. Yapese (III.u.5) 16.1 [Malayopolynesian Linkage (G.1; E): Heonesian Linkage (E.2; C): Kerebuto (C.5; IV.u.18)]; 7.3 [Acira (G.40; IV.u.3)].

G.17. 17. **Nauru (III.u.6) 16.1 [Carolinian Subfamily (G.4; III.a)].

G.18. 18. Bigic Cluster (I.e): Bulic Cluster (I.e.1) 15.8 [Malayopolynesian Linkage (G.1; E): Hesperonesian Linkage (E.1; B); Northwest Hesion (B.5; A): Philippine Hesion (A.1; II.c): Ivatan (II.c.10)].

G.19. 19. Panayati (IV.u.6) 15.2 [Tip Cluster (G.12; IV.a): Dobic Subfamily (IV.a.2)].

G.20. 20. Nubami (IV.u.1) 15.2 [Malayopolynesian Linkage (G.1; E): Heonesian Linkage (E.2; C): Mota (C.7; IV.u.19)]; 10.8 [Hapa (G.36; IV.u.2)].

G.21. 21. Geelvink Hesion (I.g): Biakic Subfamily (I.g.1) 14.6 [Malayopolynesian Linkage (G.1; E): Moluccan Linkage (E.7; D): Kuiwai (D.9; I.u.12)]; 13.6 [Waropen (G.28; I.u.15)].

G.22. 22. Uvolic Cluster (IV.b): Mamusic Genus (IV.b.2) 14.6 [Malayopolynesian Linkage (G.1; E): Heonesian Linkage (E.2; C) Kerebuto (C.5; IV.u.18)].

G.23. 23. Bombarai Hesion (I.f): Tarpic Subfamily (I.f.2) 14.5 [Malayopolynesian Linkage (G.1; E): Moluccan Linkage (E.2; D): Kuiwai (D.9; I.u.12)].

G.24. 24. Ubir (IV.u.4) 14.4 [Tip Cluster (G.12; IV.a): Wedauic Subfamily (IV.a.1)].

G.25. 25. Choiseul Subfamily (IV.d) 13.8 [New Georgian Subfamily (G.13; IV.e)].

G.26. 26. Buka Subfamily (IV.c) 13.5 [Malayopolynesian Linkage (G.1; E): Heonesian Linkage (E.2; C): Kerebuto (C.5; IV.u.18)]; 13.6 [Banoni (G.27; IV.u.15)].

G.27. 27. Banoni (IV.u.15) 13.6 [Buka Subfamily (G.26; IV.c)].

G.28. 28. Waropen (I.u.15) 13.6 [Geelvink Hesion (G.21; I.g); Biakic Subfamily (I.g.1)].

G.29. 29. Lific Cluster (IV.g): Iai (IV.g.3) 13.4 [Malayopolynesian Linkage (G.1; E): Heonesian Linkage (E.2; C): Polynesian Subfamily (C.3; III.b)].

G.30. 30. Atayalic Subfamily (II.a) 11.8 [Malayopolynesian Linkage (G.1; E): Central Formosan Hesion (E.6; II.b): Paiwan (II.b.2).

G.31. 31. Tomoip (IV.u.10) 11.5 [Malayopolynesian Linkage (G.1; E): Heonesian Linkage (E.2; C): Rotuman (C.4; III.u.3)].

G.32. 32. Tanna (IV.u.23) 11.2 [Malayopolynesian Linkage (G.1; E): Heonesian Linkage (E.2; C): Fiji (C.2; III.u.4)].

G.33. 33. North New Caledonian Cluster (IV.h): Thuangic Subfamily (IV.h.2) 11.3 [Malayopolynesian Linkage (G.1; E): Heonesian Linkage (E.2; C): Kerebuto (C.5; IV.u.18)]; 11.3 [South New Caledonian Genus (G.34; IV.i)].

G.34. 34. South New Caledonian Genus (IV.i) 11.3 [North New Caledonian Cluster (G.33; IV.h): Paici (IV.h.3)].

G.35. 35. Enggano (I.u.2) 11.1 [Malayopolynesian Linkage (G.1; E); Heonesian Linkage (E.2; C): Fiji (C.2; III.u.4), Hesperonesian Linkage (E.1; B): Northwest Hesion (B.5; A): Philippine Hesion (A.1; II.c): Murutic Subfamily (II.c.7)].

G.36. 36. Hapa (IV.u.2) 10.8 [Nubami (G.20; IV.u.1)].

G.37. 37. Hollandia Subfamily (I.h) 10.7 [Malayopolynesian Linkage (G.1; E): Heonesian Linkage (E.2; C): Polynesian Subfamily (C.3; III.b)].

G.38. 38. Pililo (IV.u.14) 10.6 [Malayopolynesian Linkage (G.1; E): Heonesian Linkage (E.2; C): Polynesian Subfamily (C.3; III.b)].

G.39. 39. Zabana (IV.u.16) 9.6 [New Georgian Subfamily (G.13; IV.e)].

G.40. 40. Acira (IV.u.3) 7.3 [Yapese (G.16; III.u.5)].

LANGUAGES REPRESENTED ONLY BY SUBADEQUATE LISTS

In this section are discussed the classification of languages implied by the percentages scored by subadequate lists. In general it is assumed that a subadequate list presents no problem in classification. Thus we attempt only to show where the language appears to fit best in the main classification.

In some cases it is inferred or conjectured that a list is consistently scoring too high or too low. Such behavior is believed to result from the fact that the meanings in the basic list have unequal probabilities of producing a cognate pair in any pair of lists. Meanings are said to differ in productivity (of cognate pairs). Thus if the blank entries of a subadequate list tend to concentrate in the less productive meanings, that list's percentages will tend to be higher than they would be otherwise, whereas if they tend to concentrate in the more productive meanings, the percentages will tend to be lower than they would be otherwise.

If the hypothesis that the percentages of a subadequate list are inflated or deflated by the subadequacy of the list will result in a simple placement of the language in relation to the main classification, this hypothesis is adopted.

The languages are discussed according to the sequence of areas presented in Section One. For convenience of reference they are given numbers under the rubric s.

I. West

s.1. 1. *Kayan (3 lists) forms the *Kayic Cluster with *Kenyah (Northern Borneo) by their common highest percentage (43.0%). Their next highest percentage is that of Kenyah with *Kalabit (36.1%). Kalabit (northern Borneo) thus forms the Kalabitic Cluster with the members of the Kayic Cluster. The next highest percentage of the members are: Kayan with Murut (I.b.1.1) 30.2%; Kenyah with the Dayak Subfamily (I.a.1.5) 29.7%; Kalabit with the Palawanic Subfamily (II.c.1.4) 28.8%. Since the Murutic Subfamily (II.c.7) has 31.8% as its basic percentage, it is important whether these percentages can be taken at face value. The percentage with Palawanic [cf. Dusun (II.c.8) with Kalabit 27.6% and Dusun with Bukidnic Subfamily (II.c.1.5) 26.4%] suggests that the percentages are inflated about 2-3 percentage points. It is clear, however, that the Kalabitic Cluster is in the Hesperonesian Linkage.

s.2. 2. *Maanyan has its highest score (43.5%) with Malagasy (I.u.1). Its next highest scores (35.8%; 35.5%) are respectively with the Dayak Subfamily (I.a.1.5) and Murut (II.c.7.1). Malagasy has its highest score with Maanyan as above and has only significantly different scores with other languages. Thus Maanyan appears to form a cluster with Malagasy. There is then this much confirmation of the Malagasy-Maanyan subgroup,[6] which we now call the Malagasic Cluster.

The level of the percentages of Maanyan is probably inflated. It would not be surprising if the true level were 5-10 percentage points lower. Thus the level of the Malagasic Cluster would be 38.0-33.0% and the joining of this subgroup with the Hesperonesian Linkage (B) at 30.0-25.0%. This solution leaves it open, of course, as to what effect Maanyan's proper level of percentages, once determined, would have on the classification involving the lower end of the West Indonesian Cluster (I.a; including the Dayak Subfamily [I.a.1.5]), Murutic (II.c.7), and the upper end of the Hesperonesian Linkage, for Maanyan could provide a link which might cause a rearrangement.

s.3. 3. *Sangir (northeast of Celebes) has its highest percentage with a Cebu list (cf. II.c.1.1.1.1.1; 39.9%) but this is closely followed by Sangir's percentages with Sasak (I.a.1.2: 36.1%), Malay (I.a.1.1.1.1.1: 36.0%), and Sikka (I.u.7: 33.0%). Sangir's percentages may be inflated by 5-10 pp. The percentage with Cebu is no doubt higher than Sangir's averaged percentage with the Tagalic Hesion (II.c.1.1.1) would be [e.g., Sangir with Tagalog (II.c.1.1.1.4: 34.8%). Sangir's averaged percentage with Malay [cf. 31.7% with Minangkabau (I.a.1.1.1.1.2)]. Both the percentages of Sasak and of Sikka show signs of being slightly inflated. Thus though we can be sure that Sangir belongs to the Hesperonesian Linkage (A), it is possible that it may provide a link between the Philippine Hesion (II.c) and West Indonesian Cluster (I.a) at a somewhat higher level than 23.0%. [The latter percentage is that given at A.7 for the West Indonesian Hesion (I.a) with the Celebes Hesion (I.c), the latter having been connected with the Philippine Hesion (II.c) by 23.9%].

s.4. 4. *Endeh (Flores I.) has as its immediately superordinate classification either the Moluccan Linkage (D) or the Malayopolynesian Linkage (E). It has 30.8% with Sikka (I.u.7) and 24.1% with Leti (I.u.9) among its highest percentages. Endeh's percentages are perhaps inflated by 3-5%.

s.5. 5. *Solor (Solor Is.) forms the Sikkic Subgroup with Sikka (I.u.7) by virtue of their common highest percentage 37.4%. The next highest percentage of either is that of Solor with *Sangir (33.0%). Since the latter percentage can be regarded as inflated (see Sangir [I.s.3]), the Sikkic Subgroup is very likely at least a cluster, but perhaps even a genus. If Sikka's percentage with *Tettum (I.s.6: 31.3%) is at a level consonant with membership in the Moluccan Linkage (D), then we should estimate that Solor's percentage with Tettum (28.3%) suggests that Solor's inflation is in the neighborhood of 5 percentage points.

s.6. 6. *Tettum (Timor I., two lists) has as its immediately superordinate classification either the Moluccan Linkage (D) or the Malayopolynesian Linkage (E). Its highest score is with Sikka (I.u.7: 31.3%), and its next highest is with Leti (I.u.9: 27.2%).

Its percentage with the Palawanic Subfamily (II.c.1.4: 26.0%) is however so close as to suggest that the probability of error is not low. It also suggests that this percentage should perhaps be regarded as inflated by about 5 percentage points; its percentage with Leti would then be about 22.0%. Its percentage with Sikka is perhaps doubly inflated because there is some indication that Sikka's percentages are slightly inflated.

s.7. 7. *Kisar is in the Letic Subgroup with Leti (I.u.9) by their common highest percentage 33.9%. The next highest percentage of either is that of Kisar with *Tettum (I.s.6) 28.3% (cf. Leti with Tettum 26.4%). The Letic subgroup appears to be a cluster.

s.8. 8. *Fordat forms the Fordatic Subgroup with Kei (I.u.10) by their common highest score 37.6%. The next highest percentage of either is that of Fordat with *Jamden (I.s.9: 31.5%). All other percentages of Fordat and Kei are significantly different. Whether Fordatic is a closed group depends on Fordat's percentage (31.5%) with Jamden. If this percentage is reliable, then Jamden is a member of the same subgroup.

s.9. 9. *Jamden may be no more closely related to *Fordat (I.s.8) than to *Tettum (I.s.6) which has 27.3% as its common percentage with Jamden. Jamden therefore belongs to the Moluccan Linkage (D). This tends to agree with its percentage with the Palawanic Subfamily (II.c.1.4: 24.4%).

s.10. 10. *Sobojo (Taliabo I.) is perhaps to be assigned to the Moluccan Linkage (D) by virtue of its highest percentage (23.2%) with the Ambic Subfamily (I.d). Among its next highest percentages is 21.5% with Baree (I.b.1.1). The latter is not far from 20.0%, the percentage at which the Moluccan Linkage (D) joins the Hesperonesian Linkage (B: cf. E.1).

s.11. 11. *Bonfia (Ceram I.) is probably to be placed in the Moluccan Linkage (D) by virtue of its highest percentage (21.0%) which is with the Ambic Subfamily (I.d) of its percentages with a non-member of this linkage. For this reason it is not unlikely that Bonfia is a low-scorer by about 3-5 percentage points.

s.12. 12. *Anus is a member of the Bombarai Hesion (I.f). Its percentages are noticeably higher with these than with any others. Its percentages are 32.6% with Sobei (I.f.1.1), 28.3% with Moar (I.f.1.2), 30.6% with Tarpia (I.f.2.1), and 37.9% with Bongo (I.f.2.2). Although these percentages suggest a hesion with Bongo, there are reasons for believing that Anus's percentages are inflated by 5-10 percentage points. If Anus's percentages were about 7.0 percentage points lower, it would be a reasonable linking language between a Tarpic Hesion and the Sobeic Subfamily. Since its percentage with Bongo would be *30.9%, its subgroup with the putative Tarpic Hesion would have the rank of a cluster (cf. its *23.2% with the Sobeic Subfamily).

s.13. 13. *Kurudu (W. Irian) is in the Geelvink Hesion (I.g) by virtue of its highest percentage which is 18.4% with Japen (I.g.2.2); cf. its successively next highest 16.6% with *Wandamen (I.g.2.1) and 15.5% with Numfor (I.g.1.2). Consideration of Kurudu's percentages does not dissolve the Geelvink Hesion.

s.14. 14. *Yotafa (W. Irian) is in the Tobatic Subfamily (I.h.1) by virtue of its highest percentage 33.8% which is with Tobati. Its percentage with Kajupulau (I.h.1.2), the other member of this subfamily, is 20.8% and with Ormu (I.h.2), the other member with the Tobatic Subfamily in the Hollandia Subfamily (I.h), is 10.2%. These last two percentages suggest that Yotafa's percentages are deflated by 5-10 percentage points; in that case Yotafa belongs in a subgroup with Tobati. If Yotafa's percentages are deflated by as much as 3 percentage points, Ormu's percentages with Kajupulau (28.2%) would be suspect as inflated (cf. the new Yotafa-Ormu *13.2%) and the Hollandia subgroup would disappear since its basic percentage would now be *17.1%, probably too low for a subgroup. If the Hollandia subgroup were to dissolve, its former members, Ormu and the Tobatic Subfamily, would probably enter separately in the Austronesian Linkage (F). It is however more likely that Yotafa's deflation is greater than 3.0 percentage points and that the present subgrouping will be maintained.

II. Northwest

s.1. 1. *Pula (Mindoro I.) is in the *Pulic Subgroup with *Nauhan (II.c.1.1.5.3) by virtue of their common highest percentage which is 56.7%. Nauhan's percentages appear to be deflated by about 4.0 percentage points. However Pula is believed to be deflated by about 5.8 percentage points. Thus it is possible that the Pulic Subgroup is a Subfamily by virtue of a corrected percentage in the neighborhood of *64.0%.

III. North and East

s.1. 1. *Gilbertese (Gilbert Is., two lists) has its highest percentage 23.9% with the Carolinian Subfamily (III.a). Its next highest percentage is 23.2% with the Polynesian Subfamily (III.b) and 21.4% with Fiji (III.u.4). Thus Gilbertese, if not inflated, presents an argument for introducing the Carolinian Subfamily into the Heonesian Linkage (C).

s.2. 2. *Paumotu (Tuamotu Arch.) has its highest percentage 44.7% with Rarotongan (III.b.2.1). Its next highest percentage is 43.0% with Hawaiian (III.b.2.2). Its highest percentage with a non-member of the East Polynesian Hesion (III.b.2) is 41.8% with Ellice (III.b.1.2.1). Paumotu appears to favor the East Polynesian Hesion slightly. However its adherence to this subgroup clearly depends on the hypothesis that its percentages are deflated by about 10-15 percentage points. Such a deflation is unusual. That some deflation is involved is suggested by a comparison of Paumotu-Fiji 16.6% with Hawaii-Fiji 22.8%. However these percentages are not significantly different. It may therefore be that some explanation other than deflation alone will ultimately have to be considered. Such a consideration can however wait until a full list for Paumotu has been obtained.

s.3. 3. *West Futuna (New Hebrides) has its highest percentage 54.1% with Tikopia (III.b.1.2.2). Its highest percentage with a non-member of the West Polynesian Cluster (III.b.1) is 46.0% with Rarotongan (III.b.2.1). West Futuna thus shows adherence to the West Polynesian Cluster. If so, its percentages with Polynesian languages are deflated, presumably by about 5 percentage points.

s.4. 4. *Ongtong Java shows a clear preference for the West Polynesian Cluster (III.b.1). Its highest percentage is 68.4% with Ellice (III.b.1.2.1) thus suggesting membership in the Ellicean Cluster (III.b.1.2). Its next highest percentage with a full list not subgrouped by a higher percentage is 56.7% with Hawaii (III.b.2.2).

s.5. 5. *Mele-Fila (Efate I., Solomon Is.) shows a preference for the West Polynesian cluster (III.b.1) by its percentage 54.7% with Tikopia (III.b.1.2.2). Its highest percentage with a full list not close-subgrouped by a higher percentage is 48.9% with Easter (III.b.2.3). If this preference is taken seriously, it implies that Mele-Fila's percentages with Polynesian languages are deflated by about 6 percentage points.

s.6. 6. *Mangareva is in the East Polynesian Hesion (III.b.2) by virtue of its highest percentage 64.6% which it shares with Marquesas (III.b.2.4). Its next highest percentage is 64.4% with Hawaii (III.b.2.2). Its highest percentage with a non-member of the East Polynesian Hesion is 57.9% with Pileni (III.b.1.5).

IV. Central

s.1. 1. *Blupblup (Schouten Is.) is in the Austronesian Linkage (G). Its highest percentage with a full list not subclassified by a higher percentage is 17.0%; this percentage is held with Palau (III.u.1). Its highest percentage with any list is 19.0% with *Kairiru (IV.s.2) and its highest with an adequate list is with Pileni (III.b.1.5).

s.2. 2. *Kairiru (N.E. New Guinea) is in the Austronesian Linkage (G) by virtue of its highest percentage with a full list 17.7% which is with Malay (I.a.1.1.1.1.1). Its highest percentage with any list is 19.5% with *West Futuna. The highest percentage with a language which is both adequate and not subclassified by any higher percentage is 17.0% with Palau. It is hardly likely that the percentages of Kairiru are deflated; it is more likely that they are inflated and the percentages are too high.

s.3. 3. *Kilenge (New Britain I.) is perhaps best placed in the Austronesian Linkage. Its highest percentage with an adequate list is 18.0% with Fiji (III.u.4).

s.4. 4. *Peleata (New Britain I.) is in the Austronesian Linkage by virtue of its highest percentage 13.2% which is with Nakanai (IV.u.11).

s.5. 5. *Kapore (New Britain I.) is perhaps to be placed in the Willaumez Linkage (F) by virtue of its highest percentage with adequate lists which are 16.0% with Bakovi (IV.u.12) and 15.0% with Nakani (IV.u.11); these two languages are the sole members of the Willaumez Linkage. If these percentages are regarded as deflated by about 3 percentage points, the placement suggested above would be justified. This would not be in disagreement with the percentages of Palau (III.u.1) respectively with Kapore (10.8%), with Bakovi (16.8%), and with Nakanai (15.5%).

s.6. 6. *Tami (N.E. New Guinea) is perhaps best assigned to either the Malayopolynesian Linkage (E) or to the Austronesian Linkage (G). Its percentage with Palau (III.u.1) is 18.7% and this would therefore have to be regarded as deflated before Tami could be assigned to the Malayopolynesian Linkage.

s.7. 7. *Bauro (San Cristoval, S. Solomon Is.) has 28.9% as its highest percentage with an adequate list not subclassified by a higher percentage; this is with Mota (IV.u.19). Similar percentages are 28.4% with Kerebuto (IV.u.18) and 25.9% with Fiji (III.u.4). These percentages suggest that Bauro is perhaps best placed in the Heonesian Linkage (C). There is perhaps a slight inflation in Bauro's percentages.

s.8. 8. *Mahaga (Santa Isabel, C. Solomon Is.) is probably in the Heonesian Linkage (C). Its highest percentage is 28.0% with Kerebuto (IV.u.18) and this is their highest common percentage. Mahaga's next highest percentage is 22.4% with Sikka (I.u.7). If this be regarded as being slightly inflated, since 19.1% is the highest link of a Moluccan Linkage (D) language in the Austronesian Linkage, then the inflation could be set at about 3 percentage points.

[6] Cf. Dahl and Dyen 1953.

CRITIQUE

At some points in the classification there are conflicts with intuition or with other classifications.

Madurese is placed by Esser in a Java Group as coordinate with Javanese and Sundanese. To bring the classification in line with Esser's classification would require the hypothesis that Madurese's percentage with the Malayan Subfamily is about 7.0 pp. too high. This is not at all impossible.

The Sundic Hesion differs essentially from Esser's classification. Esser divides all the languages concerned along with a few others into the four geographical divisions: Sumatra-Group, Java-Group, Borneo-Group, Bali-Sasak-Group.

His Java Group does not disagree very much from what is presented here (see above).

His Sumatra Group includes Achinese, Batak, Gayo, Malay, Minangkabau, Serawaj, and perhaps also Enggano (see below) as coordinates. The percentages of this group scored with each other range from over 70.0% to under 20.0%. It seems hardly reasonable that such a variation should be meaningless. Rather we must conclude that Esser's classification is too closely tied to the geography.

Esser's Borneo-Group has as coordinate members the Kenyah-Kayan group and the Murut group and Ngadju (as a member of the Ot-Danum group). Aside from the fact that Murut seems to favor the Philippine languages, the relation between these languages is different from the lexicostatistical conclusions chiefly in respect to Ngadju. The placement of the Dayak Subfamily in the Sundic Hesion depends on its percentage with Malayan Subfamily (33.4%). If this were disregarded, the relation of the Dayak Subfamily would change to that indicated by its next highest percentage; this is 27.3% with Achinese, a percentage much more like that with Murut (21.9). In any case the Murut group is not coordinate with Ngadju in a Borneo-Group; rather it is possible that both are coordinate in the Hesperonesian Linkage.

The members of Esser's Bali-Sasak group appear here as coordinate members of the Sundic Hesion rather than as subordinate members of a subgroup. Esser's classification is probably wrong here since Bali scores only 28.1% with Sasak whereas it scores 31.8% with Sundanese and Sasak scores 27.5% with Sundanese; the latter percentages point to a coordinate relation of the three rather than to a closer relation of Sasak and Balinese.

Esser finds four groups on Celebes which are represented among our lists. They are the Philippine (Sangir, Tontemboan), Gorontalic (Gorontalo, Suwawa), Toradja (Baree, Linduan), and South Celebes (Macassarese, Buginese) groups. These groups are presumably coordinate with each other and with the Sumatra group, etc., above, to judge from his statement. Actually there is thus far no reason to believe that Sangir is any closer to Tontemboan than to Gorontalic. In fact it may be closer to Gorontalic because both Sangir and Gorontalic appear to show signs of being part of the Hesperonesian Linkage at a higher level (= percentage) than Tontemboan. In any case it appears that in regard to the relation of Tontemboan and Gorontalic, the languages of Java, Sumatra and Bali probably constitute a group which is either coordinate with Tontemboan and Gorontalic, or as a unit forms a group with Gorontalic (and others) against Tontemboan.

The relation between Esser's Toradja group and his South Celebes (= Bugic) does not disagree with the construction of a Celebes Hesion, for the percentages are largely not different enough to be considered free from either chance or borrowing.

In Eastern Indonesia Esser finds the following groups represented among our lists: Bima-Sumba (Sumba, Sawu), Ambon-Timor (Solor, Kisar, Leti, Kei, Buru, Jamden, Fordat, Bonfia) Sula-Batjan (Sobojo), South Halmahera (Buli). Sumba and Sawu are coordinate with each other and respectively with Sikka, Buru, and Kei. Solor forms a subgroup with Sikka and it is not unlikely that Endeh belongs with the Sikkic subgroup, being either coordinate to the group or to the individual members. Kisar and Leti form a different subgroup which is coordinate with the Sikkic subgroup. Fordat is probably in a subgroup with Kei which perhaps includes Jamden; the latter however may simply be coordinate with the Fordatic Group. Sobojo is apparently coordinate with the Ambic Subfamily as is Bonfia. Thus instead of four groups, the lexicostatistical analysis suggests that the Moluccan Linkage involves at least the following as coordinates: Sumba, Sawu, Sikkic (? including Endeh) Fordatic (? including Jamden), Letic, Buru, Ambic, Bonfia, Sobojo. All of this suggest that Eastern Indonesia is characterized by a large number of relatively diverse languages, many or all of which form a subgroup evidenced by the Moluccan Linkage. The order of this subgroup is indicated by the percentage at which it enters the Malayopolynesian Linkage.

The earlier classifications of the Philippine languages which need to be considered are those of Conklin (1952 + 1955). In Conklin 1952 the only parts of the classification which need to be considered are (1) the subordinations and (2) the languages positively assigned to the Northern Luzon and Central Philippine groups.

Perhaps the largest single complex of differences in subordinations is found in Conklin's treatment of Ibanag and Itawi as though they were dialects and his similar treatment of Gaddang and Yogad. Conklin regards Itawi and Malaweg as synonyms, but their score of 64.2% does not agree with this treatment. The lexicostatistical percentages indicate that the Itawic Cluster (including Malaweg) as slightly closer to an Isneg language or dialect than with Ibanag. There is thus little probability that the Itawic Cluster is closer to Ibanag than to the so-called Isneg; it is not at all unlikely however, as the slight differences in percentages indicate, that the members of the Itawic Cluster occupy a position intermediate between Barran and Bayag on one side, Ibanag on another and Gaddang on a third. Similarly Gaddang appears to be no more closely related to Yogad than to the Itawic Cluster.

Among the languages treated in the classification, Conklin marks as probably North Luzon (? = Cordilleran): Ivatan, Kalinga, Gaddang, Isinay. The latter three appear to be unquestionably members of this group. It appears to be probable that Ivatan is not a member. Rather it is coordinate with both the Cordilleran Cluster and the Mesophilippine Hesion (= Conklin's Central Philippine). The so-called Dumagat languages --Casiguran and Baler--are more likely to be coordinate with each other relative to the Mesophilippine Hesion than to be members of it. Note Casiguran's 33.9% (35.4% with Ilonggo of the Mesophilippine Hesion) with Ilocano of the North Cordilleran Hesion.

Inibaloy seems more likely to be coordinate with the entire North Cordilleran Cluster than to be, as Conklin puts it, coordinate with the various members. The assignment of the Bisayan languages Hiligaynon (= Ilonggo) and Sugbuhanon (= Cebuan) and so probably the other Bisayan languages to the Central Philippine group can now be regarded as no longer provisional. Furthermore there is no longer any reason to believe that the relation of Ilonggo and Cebuan is of the same order as that between for example Ilonggo and Tagalog. Since Conklin's classification does not pretend to deal with higher order classifications we shall not deal further with differences of this type. Some of them are of great importance, for in his treatment the relation of the Bisayan languages is not distinguished from the very great difference between either one of them and say Tiruray.

To some extent Conklin corrects this in Conklin 1955. Here however only a Southern Philippines group is distinguished from a Central Philippines group. But, for example, in his Central Philippines group the similarity of Sugbuhanon (= Cebuan) and Maranao is treated as equivalent to that between Sugbuhanon and Mandaya (= Mansaka). In our classification these similarities are regarded as significantly different. Furthermore Conklin treats the similarity between Agusan-Manobo and Dibabaon (common score 61.2%) as a dialectal difference whereas the difference between Mansaka and Tagakaolo (common score 57.8%) is treated as equivalent to that of Sugbuhanon and Mansaka (see above). It may be that here as apparently elsewhere, Conklin's judgement of mutual intelligibility appears to point to approximately 60.0% (rather than 70.0%) as the language limit.

The only earlier treatments of the eastern Austronesian area that we shall deal with here are those respectively of Elbert and Grace (1955 and 1959).

Elbert assigns Maori to Eastern Polynesian (= East Polynesian Hesion) and in this respect our treatment of Maori as coordinate with East Polynesian may be due to the fact that the Maori percentages are deflated, but not significantly so. For the rest Elbert's treatment of Easter as coordinate with the group including Rarotongan and Hawaiian is not in agreement with the percentages that Hawaii shows with Rarotongan (60.2%) and with Easter Island (59.3%).

Elbert's treatment of the Tongic languages (Tongan, Niue) as being a group coordinate with the remainder of a group consisting of the remaining Polynesian languages is unsupported. There is furthermore little evidence in the percentages which agrees with Elbert's treatment of East Polynesian as one of the subclasses of a group consisting of Samoan, the Outliers (Tikopia, Ellice [? equivalent to our Ellicean Hesion]), Kapingamarangi, and East Polynesian.

The findings here disagree fundamentally with Grace's (1955, p. 338) conclusion that 'there is a large subgroup of Malayo-Polynesian which includes all the languages of Micronesia with the exception of Palauan and Chamorro, all the languages of Polynesia including the Outliers, and all the Malayo-Polynesian languages of the Melanesian area east of (approximately) the boundary between Netherlands New Guinea and the Australian trust territory of New Guinea. This subgroup is provisionally called "Eastern Malayo-Polynesian"'. Rather we find that Grace's so-called Eastern Malayo-Polynesian contains many languages and groups of languages that are independent and cannot be united by a lexicostatistical argument.

Aside from Grace's highest classification (Eastern Malayo-Polynesian) there are a number of other differences. Grace finds only one New Caledonian group where we find two independent groups of the highest order. Grace finds the Loyalty languages (Lifu, Nengone, Iai) to be each coordinate for example with the Choiseul languages. The Loyalty languages turn out to be barely short of a genus (cf. Dehu-Iai 19.0%) in comparison to North New Caledonian and South New Caledonian (11.3%).

There is practically no support for his New Hebrides-Banks grouping as a whole. His so-called Southern New Hebrides group is represented here by Aneityum and Tanna and these are highly independent of each other as well as other languages of the New Hebrides such as Paama, Male, and Mota. The evidence we have for a Heonesian grouping includes among others the members of his (1959) proposed subgrouping of Polynesian, Fiji and Rotuman. Carolinian may still turn out to be a member of the Heonesian Linkage as has been indicated.

Grace's group 10 consisting of Bougainville Straits, Bougainville, and Buka is not supported by the lexicostatistical percentages. Rather Buka seems to be occupied by a single family which also includes Teop in northern Bougainville. Banoni, the only other language of Bougainville for which we have data, is coordinate with members of the Austronesian Linkage.

Grace's group 11--which includes New Ireland, New Hanover, and the northern half of New Britain--is not supported by the percentages. Rather Mussau (north of New Hanover), Dang (New Hanover), Nalik (New Ireland), Gunantuna (= Blanche Bay, Gazelle Pen., New Britain) and the Uvolic Cluster (Uvol, Mamusi, Mengen) appear to be coordinate members --with other languages--in the Austronesian Linkage.

Grace's group 12--which includes Southwest New Britain--appears to coincide with the so-called Willaumez Linkage to the extent that the latter includes Nakanai and Bakovi and perhaps also *Kapore. However other languages in the southwestern half of New Guinea (*Kilenge, *Peleata, Tomoip, Pililo) are apparently no more closely related with members of this linkage than with each other and other members of the Austronesian Linkage.

Grace's group 7--the Southeastern Solomons--appears not to be a group in itself. Those languages which are represented in the classification (Lauic Subfamily [Malaita], Bauro [San Cristoval], Kerebuto [Guadalcanal]) are all coordinate members of the Heonesian Linkage. Grace's group 5 (New Hebrides--Banks) to the extent that it coincides with the subfamily with Mota as a member (here the only languages concerned are Efate and Mota), is likewise a member of the Heonesian Linkage.

Grace's group 8--New Georgia Archipelago--agrees with the New Georgia Subfamily and his group 9 (Choiseul) agrees with the Choiseul Subfamily. Grace's group 19 is meagerly represented by the members of the Tip Cluster (Dobu, Molima, Wedauan, and Keheraran). Ubir (Collingwood Bay) is not a member of this group by virtue of lexicostatistical percentages.

CONCLUSIONS ON MIGRATIONS

In general there can hardly be any dubiety about the overall picture. The main lines are: (1) the concentration of relatively closely related languages in the Philippines and Western Indonesia in contrast to Taiwan and Eastern Indonesia, (2) the concentration of closely related languages in Polynesia and the Carolines except in their respective western sectors, and (3) the concentration of relatively remotely related languages in the New Guinea and Melanesia areas.

These lines are drawn by percentages which are widely diverse. Distantly related languages in the above analysis refers to languages and closed subgroups whose highest percentage with any other is 20.0% or less, whereas relatively closely related are those whose cognation percentage is 30.0% or more. There can be little reasonable doubt about the implications of the lexicostatistical classification for the history of the migrations.

Of the 40 entries in the Austronesian linkage only two are from the West: the Atayalic Subfamily and Enggano. In both of these cases there is reason to believe that they exhibit a taboo configuration. This does not necessarily mean that taboo itself was the sole cause or even one of the causes of the deflation that can be attributed to them. The taboo configuration simply implies that, for whatever reason it may be, the language probably shows an unusual amount of replacement in the more productive meanings.

However in these two cases the highest percentage is so low (13.5% Atayal) and (11.0% Enggano) that the comparison of their respective significantly lower percentages with those of the respective languages with which they have their highest percentage is useless.

In any case there appears to be good evidence that Atayal is deflationary relative to Seedik. Evidence for this will appear below. The average deflation is estimated (by inspection) to be about 3-4%. This is probably smaller than the true deflation. This guess is based on the belief that since all of the percentages compared are below 13.6% (Seedik-Paiwan), the difference itself is probably compressed.

On the other hand Seedik's percentages appear to show a slight deflation relative to those of other Taiwan languages. To illustrate this I selected a number of Melanesian languages with which the other Taiwan languages show percentages in the neighborhood of 8.0%. Seedik consistently showed a score no greater than the lowest of the others and more commonly slightly lower.

There thus seems to be some reason for regarding the percentages of both members of the Atayalic Subfamily as deflated and within this family the percentages of Atayal as deflated relative to Seedik. For this reason the percentages of Atayal have been disregarded since evidently Seedik's deflation is not significant, Seedik's percentages have been taken as the closest representation of the subfamily's percentages as can be obtained. However we can now speculate in the following way. If Seedik-Paiwan 13.6% represents approximately *20.0%, then Seedik's deflation is approximately 6.4 pp. If Atayal's deflation relative to Seedik is about 3.4% then Atayal's total deflation is 9.4-10.4 pp. In that case Atayal-Paiwan 10.1% would be corrected to *19.5-20.5% and there would then be a Taiwan chain with percentage links ranging from 24.5% (Ami-Paiwan) to about *20.0%.

There are similar reasons for regarding Enggano's percentages as deflated. Its highest percentage with any adequate list is 12.6% with a Murut list [Murut (Keningau)]. Where the same Murutlist's scores are in the neighborhood of 8.0%, Enggano generally scores about 3.0-4.0 pp. less. If this can be regarded as being a compressed deflation representing about 7.0-8.0% in the more normal ranges, then Enggano's percentage with the Murut list could be corrected to about *20.0%.

With these two corrections the Atayalic Subfamily and Enggano approach more closely being either members of Hesperonesian or closely allied with it. With them minor lexicostatistical obstacles to the theory of an Austronesian expansion from a New-Guinea-Melanesian center would be removed.

There is thus lexicostatistical evidence for regarding the Malayopolynesian Linkage as a single member of the Austronesian Linkage. The Austronesian Linkage thus has its main center in the area of Melanesia: that is Melanesia and East New Guinea.

There were very early migrations from this area which settled the north coast of New Guinea, the Tip Area of New Guinea and the islands nearby, New Caledonia, the Loyalties and the New Hebrides. The order of these migrations is not entirely clear, but there appears to be some evidence that the Hollandia settlement is very old.

This suggests that the Malayopolynesian languages have their origin ultimately in some area of Melanesia. However if one examines the members of the Malayopolynesian Linkage, he will find that they show a preponderance in the west. It is however unlikely that the wave of migration swept to the west as far as say the Moluccas, the Philippines and Celebes and then swept back to form the Heonesian Linkage. Rather it would be more reasonable to look on the Malayopolynesian Linkage as being the higher-percentage end of the Austronesian Linkage and including some indeterminable number of the languages included in the Austronesian Linkage by relatively high percentages; if enough of those from Melanesia are included, the migrational source in Melanesia is restored. The two possible areas of origin of the Malayopolynesians appear to be the New Hebrides and New Britain. The former is the most likely source of the Heonesian Linkage (see below).

Under this hypothesis the Malayopolynesians appear to have made two independent entries into Indonesia at about the same time. One of these took them rapidly through Eastern Indonesia as far west as Flores. The other, probably from Palau and/or Guam, settled North Celebes, and also Borneo, and Southern Mindanao. Possibly Gorontalese represents a later settlement in North Celebes from the Philippines. Similarly the Murut and Dusun languages of North Borneo may represent later settlements from the Philippines. A different migration entirely, possibly from Guam, is represented by the Formosan languages.

From the vantage points thus gained in the Philippines, Borneo, Celebes and Formosa, there were rapid spreads throughout the respective islands. Borneo is thus presumably the source of the Javo-Sumatran family of languages and also of Malagasy.

In the east a migration from the New Hebrides is probably the source of the languages of the Heonesian linkage. The first stop may have been Fiji, but not necessarily. It remains doubtful just what the relation of the Carolinian languages is to the Heonesian languages. In any case an east-to-west movement is clearly discernible starting from the Kusaie-Ponape-Marshalls-Gilberts area; the Carolinian languages from Truk to the west stem from the Ponape area.

The Polynesian Outliers are relatively clearly marked as movements outward (and backward) from two centers. An earlier center theoretically from an area which yielded at about the same time East and West Polynesian yielded the simultaneous migration to Kapingamarangi and Nukuoro. The migration to New Zealand took place from an area with already well-marked East Polynesian characteristics.

INDEX TO THE MAIN CLASSIFICATION AND THE SUBADEQUATE LISTS

The first reference is to the point at which the language or dialect is classified. The other references are to places that the subject is mentioned (1) among the ungrouped languages of an area or (2) in the exposition of the dialects or the relations of the subadequate lists.

Achinese; I.a.1.1.1.3.

Acira; IV.u.3, G.40.

Agusan-Manobo; II.c.1.2.2.

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Ambic Subfamily; I.d, D.6, I.s.10, I.s.11.

Amboina (Ambon); I.v.1.

Ambonese; I.d.1, I.v.8.

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Banagic Cluster; II.c.11.2.1.

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Banoni; IV.u.15, G.27.

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Baree; I.b.1.1, I.s.10.

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Bareke; IV.v.5.

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Batak Subfamily; I.a.2.

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*Bolongan; II.c.7.3.

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*Buhid; II.c.1.1.4.2.

Buka Subfamily; IV.c, G.26.

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*Hanglulic Subfamily; II.c.11.2.5.3.

*Hanglulu; II.c.11.2.5.3.1.

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*Kroë; I.a.1.1.1.4.2.

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*Kwenyi; IV.i.3.2.

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**Nauru; III.u.6, G.17.

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Wedauic Subfamily; IV.a.1.

West Futuna: see Futuna, West.

West Indonesian Cluster; I.a, I.s.2, I.s.3.

West Indonesian Hesion; B.1.

West Javanese; I.v.4.

Willaumez Linkage; F, G.7, IV.s.5.

West Polynesian Cluster; III.b.1, III.s.3, III.s.4, III.s.5.

Woleai; III.v.2.

Wolean; III.a.2.2, III.v.2.

**Yakan; II.c.4.

Yapese; III.u.5, G.16.

Yogad; II.c.11.2.1.5.

Yotafa; I.s.14.

Zabana; IV.u.16, G.39.